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ABSTRACT

The junior college is examined from three aspects: institutional characteristics, student characteristics, and prediction of student academic success. Each of these topics is documented by several research articles. Measures of 36 college characteristics were intercorrelated for 581 junior colleges, and the geographical distribution of characteristics is discussed. The experiences and achievements of junior college graduates from 29 colleges showed that the majority planned to transfer to a 4-year college, worked for part of their two years at college, commuted to campus, and were generally satisfied with their college. For 102 colleges, student characteristics were correlated with characteristics of the college environment. High school seniors planning vocational education were compared with those planning to go to college and with those having no educational plans. The academic potential and college grades of junior college freshmen were compared with those of freshmen in 4-year colleges. The predictive validity of ACT (American College Testing) data for junior colleges is reported. Transfer and terminal junior college students were compared with respect to college grades, high school grades, and ACT scores. (MS)

MONOGRAPH TWO:

THE TWO-YEAR COLLEGE AND ITS STUDENTS:

AN EMPIRICAL REPORT

ED 035404

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PREFACE

Under the pressure of current social trends in America, universal post-secondary education arises as a possible national objective for the 1970's. Several social trends appear to coalesce around this idea. Jobs are becoming more complex and are requiring higher levels of skills. More trained personnel will be needed in technical and service fields. And there is widespread concern about providing greater access to economic opportunity for the country's minorities.

Among institutions of higher education, the two-year colleges are the most likely ones for many Americans to accomplish this education. Founded on a spirit of egalitarianism these "open door" institutions generally emphasize a broad curriculum which includes many fields geared to specific occupational requirements.

Several years ago the American College Testing Program inaugurated research and service programs for these schools to provide empirical information about two-year colleges and their students. These studies were conducted by the staff of the Research and Development Division and many were published in the ACT Research Report series. Some of the studies are reprinted in this monograph for the convenience of scholars of the two-year college. The reports focus on institutional characteristics, student characteristics, and prediction; and these form the organization for this monograph. The introduction to each section summarizes the articles in a non-technical fashion, relates them to one another, and considers some of their educational implications.

Future research on the two-year college planned by our staff will be concerned with the areas of assessment for vocational-technical students, career guidance for "undecided" students, and the impact of the two-year college experience on the patterns of student educational and vocational change.

The American College Testing Program is pleased to provide this monograph to educators who share its research interest in the two-year college.

Leo A. Munday, Vice President
Research and Development Division

Iowa City, Iowa
November, 1969

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PART I:

INSTITUTIONAL CHARACTERISTICS OF TWO-YEAR COLLEGES

INTRODUCTION

Comparisons among institutions of higher education invariably focus on institutional characteristics that are "countable." Like the proverbial accreditation team inquiring about the number of books in the library and the percent of faculty with doctorates, educators have tended to look for quantitative differences.

Institutional characteristics are inherently interesting because certain characteristics superficially appear to be related to or indicative of the quality of education. Whether or not this is actually the case presents an interesting research problem. The solution may depend on a future definition of "quality." In our present state of knowledge, however, we can analyze the relationships among commonly-considered institutional characteristics and reduce their number to a manageable group of variables that adequately describe the institutional differences. In addition, we can concern ourselves with the extent to which the diverse institutional characteristics of two-year colleges resemble those of four-year colleges. An investigation of these questions is reported in *A Description of Junior Colleges.*

We started with a compendium of college information obtained in 1961-62 for 581 two-year colleges and reported in *American Junior Colleges.* Next we added institutional information from ACT files and institutional scores on the Environmental Assessment Technique (EAT). These EAT dimensions showed the percent of students majoring in different curricula categories as well as the degree of curricular homogeneity on campus. The 36 variables were reported in the following categories: type of control and curricular emphasis, financial characteristics, student characteristics, faculty characteristics, and a small number of miscellaneous items such as growth rate and age of institution.

Factor analysis was employed to reduce the number of variables from 36 to a more meaningful 6. A factor that seemed to involve educational facilities was termed Cultural Affluence. Another concerned with curricular technological emphasis was called Technological Specialization. A third factor with relatively heavy loadings on total enrollment, library size, and variety of curriculum was labeled Size. The fourth factor, called Age, described colleges varying in age, percent of faculty full-time, and percent of part-time students. The fifth factor had relatively heavy loadings on teacher training, Social Orientation (one of the EAT variables), and percent of faculty with a master's degree and was named Transfer Emphasis. The last factor obtained, called Business Orientation, described colleges that varied in terms of students with an Enterprising Orientation (another one of the EAT variables) and percent of faculty with doctorates.

These factors, one may assume, are somewhat descriptive of the institutional characteristics for two-year colleges. We desired to compare these factors with a similar set of institutional characteristics for bachelor's degree-granting colleges and universities. This question is relevant to the "uniqueness" point sometimes made by two-year college educators; i.e., two-year colleges as a group are unique among institutions of higher education. Our position is a diplomatic "Yes, but . . .". The relationships among these institutional characteristics for two-year and four-year colleges are similar in some respects and different in others. College characteristics related to institutional size seem to recur most consistently in both types of colleges.

Different historical traditions, social environments and economic needs could conceivably have produced various patterns in two-year colleges from one geographic region to another. If different patterns were found to exist, this might not only show the two-year college to be a socially adaptive institution but also might imply that two-year colleges could have different futures, develop in different ways, and experience different kinds of problems in the 1970's.

To explore these possibilities, we computed factor scores on the six institutional factors discussed above for 581 two-year colleges. Institutions were classified into seven geographic regions: New England, Mideast, Great Lakes, Plains, Southeast, Southwest and Rocky Mountains, and the Far West. Means on the factors were computed by region, and significance tests were conducted. The results are reported in ***Regional Differences in Junior Colleges.***

Regional differences were found in all six factors. The findings dramatize how diverse are the patterns of higher education across the country. For example, two-year colleges in the Far West rate high on the Size factor as a result of California having large-enrollment two-year colleges while the populous Mideast and New England regions do not have two-year colleges with comparable enrollments. Other differences were found in the Age set. The Far West is understandably low, but the Southeast, Southwest and Rockies, and Plains states are high in the Age factor. An older section of the country, the Mideast region, is low in this factor. This fits with our knowledge of the development of two-year colleges. Because the California plan depends heavily on these colleges for undergraduate instruction, the size of these institutions is large, while the Mideast was one of the last sections of the country to develop two-year colleges.

We conclude that, for whatever reason, the characteristics of two-year colleges at present differ considerably, from region to region. It is interesting to speculate whether present differences will produce more accentuated differences through the years or whether certain overall national trends will make two-year colleges a decade from now more alike from region to region. Such trends may include accelerated faculty and administrator migration, increased federal spending for higher education, and the development of a more national rather than regional social environment.

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A DESCRIPTION OF JUNIOR COLLEGES

James M. Richards Jr.[1]
Lorraine M. Rand
Leonard P. Rand

SUMMARY

In a population of 581 accredited junior colleges, measures of 36 major attributes were intercorrelated. With unity in the diagonal, a principal components analysis was carried out, extracting 12 factors with an eigenvalue greater than 1.00. The first six of these factors were rotated to a final solution through the Varimax procedure. The six rotated factors were titled: Cultural Affluence, Technological Specialization, Size, Age, Transfer Emphasis, and Business Orientation. The junior college factors are not congruent with factors for four-year colleges.

The increasing interest in higher education shown by the general public and the burgeoning studies of colleges and universities have emphasized the need for comprehensive information about the characteristics of colleges and the ways in which colleges differ. Such information is essential to gaining an understanding of the effect on student growth and development of different college environments.

In the past seven years, several ways of describing institutions of higher education have been tried. Pace and Stern (1958) have developed the College Characteristics Index (CCI), a true-false inventory which measures 30 features of the environmental "press" of the college. Astin and Holland (1961) have developed the Environmental Assessment Technique (EAT) which attempts to assess the environment in terms of eight characteristics of the student body: its size, average intelligence, and six "personal orientations"–Realistic, Intellectual, Social, Conventional, Enterprising, and Artistic–based on the proportion of students in each of six classes of major field. These EAT variables were found to account for a substantial amount of variance in CCI scales, and later they were shown to predict the "effects" of the colleges as reported by the student (Astin, 1963). Still another way to describe college environments is factor analysis of various measures of college characteristics (Astin, 1962, 1965a). Finally, college environments have been viewed simply as a set of potential stimuli, or "observable characteristics of the college that are capable of changing the sensory input to the student attending the college" (Astin, 1965b).

Previous studies of college environments, however, have been restricted to four-year colleges granting the baccalaureate degree. The nearly 600 accredited junior colleges in the United States have been ignored. Indeed, the failure of behavioral scientists concerned with education to consider junior colleges is pervasive. For example, in a recent book of more than 1000 pages self-described as "a psychological and social interpretation of the higher learning" (Sanford, 1961), the index cites ten references to junior colleges, which is six references fewer than to *house masters* at Harvard. Moreover, the majority of the few references to junior colleges patronize and dismiss junior colleges as another two years of high school.

The major exception to the general neglect of junior colleges is the work of the University of California Center for the Study of Higher Education. This work, however, has involved general treatments of junior colleges (Medsker, 1960), sociological studies of single junior colleges (Clark, 1960), and studies of the articulation between two- and four-year colleges (Knoell and Medsker, 1964). No attempt has been made to develop descriptions of junior college environments or to study the effect of junior colleges on students.

This disregard of junior colleges is unfortunate because of several trends in our society. The population of college-age people is growing rapidly, and changing employment patterns have produced an increasing need for highly trained, skilled personnel and declining need for unskilled workers. As a result, the demand for education beyond high school is expanding very rapidly, and there is no indication of any decline in the future. In spite of the serious social problems resulting from these trends, many four-year colleges, and especially the most prestigious institutions, have been unwilling (or unable) to make any response other than increasing selectivity. As a result, it is probable that most of the burden of meeting the increased demand for education beyond high school will fall on junior colleges. Some projections estimate that by 1970, some junior college will be the first college attended by 75% of entering college freshmen (Prudential, 1963). In this situation, the interests of students, of colleges, and of society demand that plans for the future growth of junior colleges be as rational as possible and based on knowledge of colleges and their effects upon student development and accomplishment.

The present study is a step in providing the knowledge necessary to intelligent planning for better junior colleges. The basic purpose is to organize the information currently available about junior colleges into a brief profile. Such a brief profile can be used both to characterize individual junior colleges, and in subsequent research to study the effects of colleges on students more efficiently. The basic technique is a factor analysis of 36 measures of junior college characteristics. This study, therefore, is largely a replication in a population of junior colleges of Astin's (1962) study of four-year colleges.

PROCEDURE

POPULATION OF JUNIOR COLLEGES

The group of junior colleges consisted of 581 accredited, two-year colleges. This group included all junior colleges for which data are reported in *American Junior Colleges* (Gleazer, 1963), with the exception of colleges which are exclusively for the training of priests, members of religious orders, etc. The sole restriction for inclusion in *American Junior Colleges* is that the college be recognized by regional or state accrediting agencies. Therefore, the group of colleges studied should be considered the population of accredited junior colleges, rather than a sample of some population.

MEASURES OF JUNIOR COLLEGE CHARACTERISTICS

Thirty-six institutional variables were selected for study. The choice of variables had two primary aims: first, to include at least some data for all methods which are currently used in characterizing institutions, and, second, to include as many as possible of the variables Astin (1962) used in his study of four-year colleges. Unless stated otherwise, the information about junior college characteristics was obtained from *American Junior Colleges* (Gleazer, 1963). In most cases the information in this compendium was reported by each junior college for the academic year 1961-62.

Type Characteristics. Among the most commonly used ways of classifying colleges are type of control and curricular emphasis. The following five measures of these characteristics were included in this study:

1. Private versus Public Control–Public score 0; private score 1.
2. Degree of Religious Control–Non-denominational score 0; Protestant score 1; Catholic score 2.
3. Liberal Arts Emphasis–No liberal arts curriculum 0, liberal arts plus other curricula 1, liberal arts curriculum only 2.
4. Teacher Training Emphasis–No teacher training 0, teacher training plus other training 1, teacher training only 2.
5. Technical Training Emphasis–No technical school training 0, technical training plus other training 1, technical school only 2.

Financial Characteristics. Measures of five financial characteristics were included. In order to eliminate any correlations due simply to differing sizes of junior colleges, all financial characteristics (except tuition) were divided by the junior college's total enrollment thus expressing each measure on a "dollars per student" basis.

6. Tuition–For public institutions, non-resident fees were used.
7. Endowment–Estimated market value.
8. Operating Budget–Annual expenditures for educational and general purposes.
9. Capital Income–Gifts and appropriations for capital purposes.
10. Scholarship Funds–Amount of money available for scholarships.

Student Characteristics. The following fourteen characteristics of the student body were assessed as follows:

11. Percentage of Males in the Student Body
12. Percentage of Out-of-State Students in the Student Body
13. Percentage of Foreign Students in the Student Body
14. Percentage of Part-Time Students in the Student Body
15. Percentage of Students Earning Half or More of their College Expenses
16. Total Enrollment–In order to obtain a more nearly normal distribution, the score on this variable is the square root of the total number of students enrolled.
17. Aptitude Level–The score used for this variable was average composite score on the American College Testing Program's national test battery of applicants to each college in the academic year 1962-63. Unpublished ACT research indicates a correlation of .96 between average composite scores of applicants and average composite scores of freshmen who actually enter colleges. The ACT test battery is a typical test of academic potential, with reliabilities and validities against grade criteria of the magnitude to be expected for such tests (*ACT Technical Report,* 1965).
18. Realistic Orientation–Percentage of students studying agriculture, forestry, engineering, etc.
19. Intellectual Orientation–Percentage of students studying science, mathematics, philosophy, etc.
20. Social Orientation–Percentage studying education, nursing, etc.
21. Conventional Orientation–Percentage studying accounting, secretarial, etc.
22. Enterprising Orientation–Percentage studying political science, pre-law, business administration, marketing, etc.
23. Artistic Orientation–Percentage studying art, music, journalism, etc.

Variables 18-23 compose the heart of the Environmental Assessment Technique (Astin and Holland, 1961). There is some doubt as to the appropriateness of using these variables in a factor analysis since there is an ipsative relationship among them. Nevertheless, the [illegible] included in this study because they tap important information and in order to replicate as nearly as possible Astin's (1962) study of four-year colleges. Astin's results, in addition, were clear and meaningful, which suggests that the results were not seriously affected by the ipsative scoring of the EAT variables. In the present study, the EAT variables are based only on fields which clearly belonged in one of the types. Students in an undifferentiated "liberal arts" curriculum were not considered.

24. Homogeneity–Score on this variable is the difference between the highest and lowest EAT variable. High scoring (homogeneous) colleges tend to have students in only one curriculum, while low scoring (heterogeneous) colleges have students enrolled in a wide variety of fields.

Faculty Characteristics. These included:

25. Percentage of Faculty Holding a Doctoral Degree

26. Percentage of Faculty Holding a Masters Degree

Variables 25 and 26 concern the extent to which the faculty has training beyond the baccalaureate degree. On an over-all basis, about one-third of the members of junior college faculties have only a bachelors degree. Scores on these two variables differ from Astin's (1962) study of four-year colleges in that, in this study, they were based on the total faculty, both full-time and part-time.

27. Percentage of Faculty which is Full-Time

28. Faculty-Student Ratio–Number of full-time faculty divided by number of full-time students.

Miscellaneous Characteristics. Included here are:

29. Library Size–Number of books in the library.

30. Relative Library Size–Number of books divided by the total enrollment.

31. Variety of Curriculum–Total number of different fields of study offered.

32. Percentage of Graduates Going On to Four-Year Colleges

33. Growth Rate–Percentage of increase in enrollment between 1958 and 1962.

34. California Location–Colleges located in California 1, other colleges 0. This variable was included because California has the most extensive junior college system in the country, and we wanted to investigate whether this system has any special characteristics which distinguish it from other junior colleges.

35. Age of Institution–Colleges founded since 1954 scored 0, colleges founded between 1945 and 1954 scored 1, colleges founded between 1930 and 1944 scored 2, and colleges founded before 1930 scored 3.

36. Placement Service–Colleges having a placement service scored 1, other colleges scored 0.

METHOD

Product moment correlations were computed among the 36 variables.[2] Since not all scores were available for all colleges, a program which allows for missing data was used. Thus correlations are based only on those colleges for which data were available. The resultant correlation matrix was factored by the principal components method based on eigenvalues and eigenvectors with unity in the diagonal and extraction of all factors with an eigenvalue greater than 1.00. This procedure, including the use of unity in the diagonal, is Harris's (1964) *Model A* factor analysis and it follows the rationale presented by Kaiser (1960). A major advantage of this procedure is that it produces factors which are linear combinations of the observable variables, thus making it possible to compute factor scores (Kaiser, 1965).

Twelve factors with an eigenvalue greater than 1.00 were extracted. However, several considerations–including an unsatisfactory preliminary rotation of all twelve factors, a comparison of communalities after extraction of each factor with the highest correlation for each variable, and a plot of the eigenvalues–suggested that only half of these twelve factors should be included in the factor rotation. Accordingly, the first six factors were rotated to a final solution by the Varimax procedure (Kaiser, 1958).

RESULTS

The mean, standard deviations, and number of colleges for which a score was available for each variables are shown in Table 1. Some variables are highly skewed. For the most part, these variables are those on which a relatively large number of colleges had a score of 0. For example, many junior colleges (especially public colleges) have no endowment. As a result the distribution of endowment is quite skewed. In such cases, of courses, there is no transformation which will eliminate the skewness.

TABLE 1

MEANS, STANDARD DEVIATIONS, AND NUMBERS OF OBSERVATIONS FOR JUNIOR COLLEGE CHARACTERISTICS

Variable	*No. of Colleges for which Data Available*	*Mean*	*Standard Deviation*
1. Private (versus Public) Control	581	.32	.47
2. Degree of Religious Control	581	.22	.49
3. Liberal Arts Emphasis	574	.91	.38
4. Teacher Training Emphasis	574	.58	.49
5. Technological Emphasis	574	.75	.47
6. Tuition	533	394.57	383.90
7. Endowment/Student	509	340.56	2116.56
8. Operating Budget/Student	482	648.59	567.78
9. Capital Income/Student	191	305.56	489.72
10. Scholarship Funds/Student	520	20.31	71.12
11. Percentage of Males	571	58.48	23.08
12. Percentage of Out-of-State Students	501	15.38	22.31
13. Percentage of Foreign Students	578	.80	1.64
14. Percentage of Part-Time Students	571	29.17	27.02
15. Percentage of Students Earning ½ of Expenses	386	52.09	27.68
16. Total Enrollment	579	30.10	22.07
17. Aptitude Level of Students	314	18.14	2.07
18. Realistic Orientation	497	25.26	24.30
19. Intellectual Orientation	497	6.86	8.00
20. Social Orientation	497	24.79	19.94
21. Conventional Orientation	496	26.39	22.48
22. Enterprising Orientation	497	9.51	14.61
23. Artistic Orientation	496	5.36	10.42
24. Homogeneity of Environment	497	47.60	23.62
25. Percentage of Faculty with Ph.D.	575	6.92	8.44
26. Percentage of Faculty with Masters	577	61.34	20.59
27. Percentage of Faculty which are Full-Time	579	65.06	26.64
28. Faculty-Student Ratio	575	.07	.07
29. Library Size (units of 1000 books)	570	12.76	11.19
30. Relative Library Size	569	27.68	44.13
31. Variety of Curriculum	575	17.68	14.70
32. Percentage of Graduates Going to Four-Year Colleges	467	39.50	24.08
33. Growth Rate	476	59.79	89.59
34. California Location	581	.12	.33
35. Age of College	581	1.86	1.19
36. Placement Service	581	.66	.47

The correlations among the various junior college characteristics are presented in Table 2. The unrotated matrix of the twelve factors with an eigenvalue greater than 1.00 is presented in Table 3. The factor solution for the Varimax rotation of the first six factors is given in Table 4.

TABLE 2

CORRELATIONS AMONG JUNIOR COLLEGE CHARACTERISTICS

Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*
1.	--																	
2.	65	--																
3.	14	12	--															
4.	−18	−04	09	--														
5.	−45	−33	−28	25	--													
6.	32	08	−07	−22	−19	--												
7.	26	19	00	−09	−08	09	--											
8.	40	09	02	−15	−25	32	23	--										
9.	02	07	−02	01	−12	05	01	23	--									
10.	22	14	09	−02	−18	06	34	10	12	--								
11.	−31	−32	−22	−01	44	−20	−10	−23	−02	−12	--							
12.	60	35	17	−10	−43	33	13	57	09	13	−43	--						
13.	30	27	06	−06	−11	08	23	18	−01	40	−15	27	--					
14.	−41	−30	−08	08	27	−24	−13	−41	−12	−17	14	−42	−18	--				
15.	−29	−26	05	13	17	−17	01	−17	05	−09	04	−26	−09	40	--			
16.	−32	−26	−05	16	31	−22	−10	−27	−21	−16	12	−25	−07	57	19	--		
17.	−09	−08	09	08	13	−02	00	06	12	−04	03	14	03	08	20	15	--	
18.	−32	−31	−33	−23	53	−04	−04	−12	14	−11	54	−29	−08	14	04	14	08	--
19.	−11	−06	04	20	12	−16	01	−13	−03	−05	06	−13	−06	14	06	17	−17	−13
20.	08	22	17	57	−06	−07	−03	05	04	04	−18	13	04	−14	−04	−09	14	−36
21.	15	14	14	−20	−35	07	01	05	−08	05	−32	12	04	−07	−01	−08	−14	−41
22.	09	−06	04	−04	−05	13	−03	01	−10	02	00	03	02	07	00	02	01	−17
23.	16	06	01	−01	−11	07	14	18	−10	00	−27	24	06	−03	04	07	04	−20
24.	23	11	−27	−37	−15	20	04	20	20	03	05	17	03	−25	−16	−30	02	28
25.	07	06	19	02	−04	12	05	08	08	03	−06	03	10	10	−04	06	13	−01
26.	−17	−01	33	31	00	−13	−05	−15	−12	01	−04	−08	−09	−10	02	−07	00	−29
27.	14	10	01	03	−07	09	04	21	02	04	−08	19	06	−37	−32	−01	−09	−11
28.	16	12	−07	−14	−16	08	03	21	12	06	−06	13	19	00	−09	−12	−15	00
29.	03	03	09	13	05	−08	02	06	−06	00	−07	15	09	14	01	60	15	−10
30.	34	35	07	−04	−28	03	11	27	07	16	−16	34	37	−29	−11	−31	−01	−25
31.	−38	−23	01	50	42	−35	−08	−21	−16	−14	11	−27	−07	30	22	54	12	−01
32.	−02	06	35	15	−01	−20	−09	−06	−06	01	12	−07	−02	00	11	−01	−09	−22
33.	01	−03	02	−07	02	07	05	−14	−08	−02	09	−12	01	15	14	06	−04	04
34.	−21	−16	−03	09	18	−38	−02	−08	−07	−09	05	−16	07	38	08	57	23	09
35.	28	18	11	13	−04	01	00	15	−14	08	−03	26	15	−35	−23	00	05	−06
36.	−22	−20	−15	13	23	−01	01	−18	−11	−06	09	−21	−01	23	18	31	18	12

Variable	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*27*	*28*	*29*	*30*	*31*	*32*	*33*	*34*	*35*	*36*
19.	--																	
20.	00	--																
21.	−10	−27	--															
22.	−08	−17	−18	--														
23.	06	−02	−10	−10	--													
24.	−37	−11	23	−16	−12	--												
25.	−02	01	−06	15	−02	−07	--											
26.	10	25	06	−02	−02	−30	−08	--										
27.	−04	06	05	−03	06	−01	00	10	--									
28.	−08	00	03	−04	08	16	02	−18	13	--								
29.	13	09	01	−02	15	−19	12	−01	15	−02	--							
30.	−08	23	10	−09	11	15	−03	−08	02	45	09	--						
31.	29	15	−16	00	12	−51	−07	19	07	−14	34	−21	--					
32.	15	22	−06	06	02	−26	08	39	−05	−05	11	07	08	--				
33.	01	−09	−03	16	−07	−01	10	−05	−15	00	−14	−11	−07	07	--			
34.	16	−07	−04	−05	14	−23	10	−12	00	−04	33	−15	45	−03	−06	--		
35.	01	21	−06	−12	13	−02	−13	12	22	−07	30	18	08	09	−27	03	--	
36.	10	−13	−01	10	−06	−04	02	−10	02	−03	09	−20	20	−18	05	19	−09	--

TABLE 3

UNROTATED FACTOR MATRIX, EIGENVALUES, AND COMMUNALITIES

Variable	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*	*XI*	*XII*	h^2
1. Private (versus Public) Control	76	11	16	09	−02	−06	−19	03	−01	10	−23	−21	73
2. Degree of Religious Control	58	23	01	03	−07	19	−12	02	06	28	−19	−40	72
3. Liberal Arts Emphasis	16	48	−28	27	−11	−11	06	33	24	−16	09	06	63
4. Teacher Training Emphasis	−29	58	−16	−27	−22	−06	13	−32	−09	26	10	−07	78
5. Technological Emphasis	−65	−12	12	−38	−14	−06	−16	−10	01	01	−08	04	66
6. Tuition	44	−25	09	11	02	−48	−05	−18	−15	03	00	07	56
7. Endowment/ Student	26	02	23	10	−25	10	−29	−39	22	−35	01	−10	52
8. Operating Budget/ Student	57	01	31	−12	−09	−22	13	03	−19	−30	16	14	58
9. Capital Income/ Student	17	−18	02	−15	−38	04	38	06	−06	−19	47	−26	71
10. Scholarship Funds/Student	32	09	07	05	−32	19	−30	−25	41	−15	22	06	65
11. Percentage of Males	−47	−34	−08	−39	−16	05	−30	28	07	−03	−04	11	70
12. Percentage of Out-of-State Students	70	20	27	00	01	−24	15	04	−07	−07	−12	02	72
13. Percentage of Foreign Students	35	15	33	05	−33	24	−31	−07	24	09	02	20	63
14. Percentage of Part-Time Students	−66	−03	14	44	−10	17	09	06	−12	10	−07	−07	74
15. Percentage of Students earning ½ of Expenses	−41	02	−06	33	−31	12	33	−18	01	−21	−16	22	64
16. Total Enrollment	−63	26	50	18	14	−02	−04	14	05	11	−02	−06	80
17. Aptitude Level of Students	−13	10	30	−05	−37	−30	47	05	31	01	−17	14	71

Variable	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*	*X*	*XI*	*XII*	h^2
18. Realistic Orientation	−38	−62	24	−40	−17	00	−10	18	09	−14	−05	−06	84
19. Intellectual Orientation	−27	32	−04	03	08	16	−26	−13	−29	−24	15	−34	57
20. Social Orientation	13	55	−21	−34	−33	00	25	−14	−10	32	−08	−12	80
21. Conventional Orientation	29	−01	−07	43	49	28	23	−01	34	08	18	09	80
22. Enterprising Orientation	−02	−02	−04	33	−15	−50	−34	05	−14	20	02	26	63
23. Artistic Orientation	13	28	32	10	10	00	06	−15	−35	−44	−31	09	67
24. Homogeneity of Environment	39	−59	11	−15	04	12	24	08	19	14	−09	−02	68
25. Percentage of Faculty with Ph.D.	03	07	14	28	−36	−31	−06	33	00	09	30	−26	61
26. Percentage of Faculty with Masters	−08	48	−53	−10	09	−09	−01	−02	20	−13	09	23	66
27. Percentage of Faculty which are Full-Time	23	19	18	−32	34	−18	−18	−01	−01	08	48	13	65
28. Faculty-Student Ratio	29	−11	20	02	−15	41	−04	13	−47	19	25	34	78
29. Library Size	−13	48	54	01	11	−03	−01	28	07	05	01	−02	64
30. Relative Library Size	53	16	10	−10	−24	44	04	12	−18	16	−09	29	74
31. Variety of Curriculum	−60	51	20	−12	05	02	−02	−15	−07	00	07	07	72
32. Percentage of Graduates Going to 4-Year Colleges	−06	42	−41	03	−18	07	−18	44	−02	−18	−06	14	67
33. Growth Rate	−11	−18	−14	40	−26	−09	−28	−02	−07	13	−17	−04	43
34. California Location	−44	26	54	11	05	16	07	18	08	−05	07	−11	64
35. Age of College	23	39	19	−48	20	−06	−12	13	21	−01	−27	06	68
36. Placement Service	−37	−07	29	13	02	−12	−01	−36	14	31	14	19	55
Eigenvalue	5.70	3.44	2.39	2.08	1.70	1.56	1.52	1.32	1.29	1.21	1.18	1.07	

TABLE 4

VARIMAX ROTATION OF FIRST SIX FACTORS

	A	B*	C	D*	E*	F*	
Variable	*Cultural Affluence*	*Technological Specialization*	*Size*	*Age*	*Transfer Emphasis*	*Business Orientation*	h^2
1. Private Control	47	−41	−22	37	−09	23	63
2. Degree of Religious Control	47	−33	−17	23	11	−03	43
3. Liberal Arts Emphasis	06	−37	−03	−06	49	21	43
4. Teacher Training Emphasis	−05	24	22	08	68	00	58
5. Technological Emphasis	−28	67	26	−09	02	−09	61
6. Tuition	−01	−17	−29	24	−30	49	50
7. Endowment/ Student	42	−05	04	00	−08	13	20
8. Operating Budget/ Student	36	−09	−12	45	−17	32	49
9. Capital Income/ Student	32	26	−23	−03	−04	10	23
10. Scholarship Funds/ Student	48	−05	−09	−02	07	05	25
11. Percentage of Males	−21	64	−06	−16	−07	−19	51
12. Percentage of Out-of-State Students	39	−34	−10	52	−06	35	67
13. Percentage of Foreign Students	64	−06	10	06	−02	07	43
14. Percentage of Part-Time Students	−17	08	50	−64	−05	−02	69
15. Percentage of Students earning ½ of Expenses	00	09	20	−56	14	06	38
16. Total Enrollment	−22	09	83	−13	−04	03	76

Variable	A *Cultural Affluence*	B* *Technological Specialization*	C *Size*	D* *Age*	E* *Transfer Emphasis*	F* *Business Orientation*	*h^2*
17. Aptitude Level of Students	12	30	23	03	06	42	34
18. Realistic Orientation	–11	73	–02	–09	–45	–08	77
19. Intellectual Orientation	–09	–05	28	–08	27	–19	21
20. Social Orientation	25	15	–06	23	67	02	59
21. Conventional Orientation	–02	–68	–03	–05	–22	–26	59
22. Enterprising Orientation	–17	–10	–03	–15	02	57	38
23. Artistic Orientation	16	–22	31	21	00	08	22
24. Homogeneity of Environment	21	08	–40	12	–56	–11	55
25. Percentage of Faculty with Ph.D.	14	00	08	–16	05	53	33
26. Percentage of Faculty with Masters	–27	–14	–12	07	65	–09	54
27. Percentage of Faculty which are Full-Time	–08	–08	06	60	–02	–02	37
28. Faculty-Student Ratio	50	–04	–03	–04	–20	–20	33
29. Library Size	11	–07	67	27	09	08	56
30. Relative Library Size	69	–13	–13	15	08	–20	58
31. Variety of Curriculum	–21	21	66	01	37	–10	68
32. Percentage of Graduates Going to Four-Year Colleges	01	–08	–07	–14	60	–05	39
33. Growth Rate	–01	–05	–10	–47	–03	26	30
34. California Location	04	08	75	–08	–05	–07	58
35. Age of College	09	03	13	67	20	–11	52
36. Placement Service	–16	14	37	–15	–18	13	25

**Reflected factor*

Finally, in order to compare the factors obtained in this study with the factors Astin (1962) obtained for four-year colleges, the *Coefficient of Congruence* (Tucker, 1951) was computed between each rotated factor for this study and each of Astin's rotated factors. These calculations involved only the variables common to the two studies. Results are shown in Table 5, with Astin's factors rearranged so that, to the extent possible, highest *Coefficients of Congruence* are in the diagonal.

TABLE 5

SIMILARITY BETWEEN FACTORS FOR JUNIOR COLLEGES AND FOR FOUR-YEAR COLLEGES

	Junior College Factors					
Four-Year College Factors	*Cultural Affluence*	*Technological Specialization*	*Size*	*Age*	*Transfer Emphasis*	*Business Orientation*
Affluence	.5987	.0108	.0658	.1968	−.1304	.4580
Realistic Orientation	−.1971	.6639	.1265	−.0759	−.5135	−.1808
Size	−.0865	.3287	.7236	.1098	.0815	.0654
Masculinity	−.3888	.3677	.1195	−.3507	−.2957	−.2998
Homogeneity	.1394	.2877	−.5656	.0277	−.4278	−.1736
Public vs. Private Control	.4410	−.4806	−.2397	.3302	−.1921	.3542

Note.–Four-year college factors obtained from study by Astin (1962).

DISCUSSION

The rotated factors are briefly described and interpreted below:

Factor A. The variables with high loadings on this factor describe a college which has a large number of library books per student, relatively many foreign and out-of-state students, and many faculty members relative to the number of students. It is privately or religiously controlled, and is relatively well financed. This pattern looks like the factor named Affluence by Astin (1962) in his study of four-year colleges. In the present study, however, the factor appears to involve facilities, such as the library and the faculty, more than financial wealth. An appropriate title, therefore, would be *Cultural Affluence.*

Factor B. Loadings on this factor describe a college with a technological emphasis and many students in technical programs, with many male students, with few students studying such fields as education and secretarial work, and with few out-of-state students. It is a public school which does not emphasize the liberal arts. A good title would be *Technological Specialization.*

Factor C. Colleges that would score high on this factor have large enrollments; large libraries; a varied, heterogeneous curriculum; many part-time students; and a placement service. The best title for this pattern would probably be *Size.* The college scoring high would probably be an urban-centered, open door comprehensive college, with a strong emphasis on continuing education. In addition, one would expect the high scoring college to be characterized by an impersonal atmosphere, few personal contacts between students and faculty, several highly organized student subcultures, and a relatively clear status hierarchy of social groups.

California junior colleges are distinguished from other colleges by a high loading on this factor. It is interesting, and probably contrary to popular belief, that California location failed to load substantially on any other factor.

Factor D. Loadings represent a college which is old, which has faculty and students who are both full-time, which has few working students but relatively many out-of-state students, which has *not* grown, which spends relatively much money per student, and which is a private school. An appropriate title would be *Age.* The high scoring college would probably resemble a small, four-year, liberal arts college. It would likely have many traditions, a residential student body, and an administration which conceived of its role as acting *in loco parentis.* Such a college would also be likely to have a selective admissions policy, although not necessarily one that emphasizes academic aptitude. An alternative title, therefore, might be Traditional Exclusiveness.

Factor E. Colleges characterized by the variables loading high on this factor emphasize teacher training and liberal arts and offer a heterogeneous environment. They have many students studying such fields as education, many graduates who go on to four-year colleges, and many faculty members with masters degrees. A common denominator to most of these variables is a requirement for further education beyond junior college, and, accordingly, many graduates of high scoring colleges seek advanced training. The best title for this factor would probably be *Transfer Emphasis.*

One would expect the colleges scoring *low* on this factor to be terminal colleges primarily concerned with practical vocational training, making little effort to model their curriculum on what has been traditional for four-year colleges. The high scoring college would be concerned more with pre-professional, exploratory training.

Factor F. The high scoring college on this factor has relatively many students in fields characterized as Enterprising, relatively many faculty members with Ph.D.'s, high tuition, bright students, and many out-of-state students. In addition, it spends an above average amount of money per student. The interpretation of this factor is less manifest than was the case for the preceding factors. As an aid in the interpretation, colleges with high scores on the Enterprising Orientation variable were identified. Two types of college appeared to predominate. First, small private colleges on the East coast with many students studying sales and retailing, and, second, large public colleges on the West coast with many students studying management. The trait common to these two kinds of colleges appears to be an emphasis on providing students with a *business* skill having immediate utilitarian value. This factor, therefore, might best be named *Business Orientation.*

The comparison of the factors for this study with Astin's (1962) factors for four-year colleges indicates some similarity, but in no case was the *Coefficient of Congruence* high enough to justify considering factors identical. In the present study, of course, no attempt was made to use Astin's solution as a criterion in the rotation of the junior college factors. On the other hand, an independent analytic rotation is probably a more stringent test of equivalence of factors than is using one solution as a criterion for the rotation of another solution, and independent analytic rotations do produce good matches between rotated factors in some cases (Richards, 1965a, 1965b). Therefore, these results appear to mean that junior colleges are different from four-year colleges, and that it would not be appropriate to apply a classification scheme developed for one type of college to the other type.

The factors obtained in this study make it possible to describe and compare junior colleges in terms of factor scores. To illustrate this procedure the profiles of estimated factor scores for two junior colleges are compared in Figure 1. Two colleges were selected with the expectation that they would show markedly different profiles. One college was a private, religious school in the Midwest, and the other was a public, urban, technical school on the West Coast. Figure 1 demonstrates that the profiles are indeed quite different. The private Midwestern school is more affluent in cultural facilities, is not characterized by technological specialization, is smaller, and is older. It puts more emphasis on transfer to a four-year college, and it tends to provide students with a business skill.

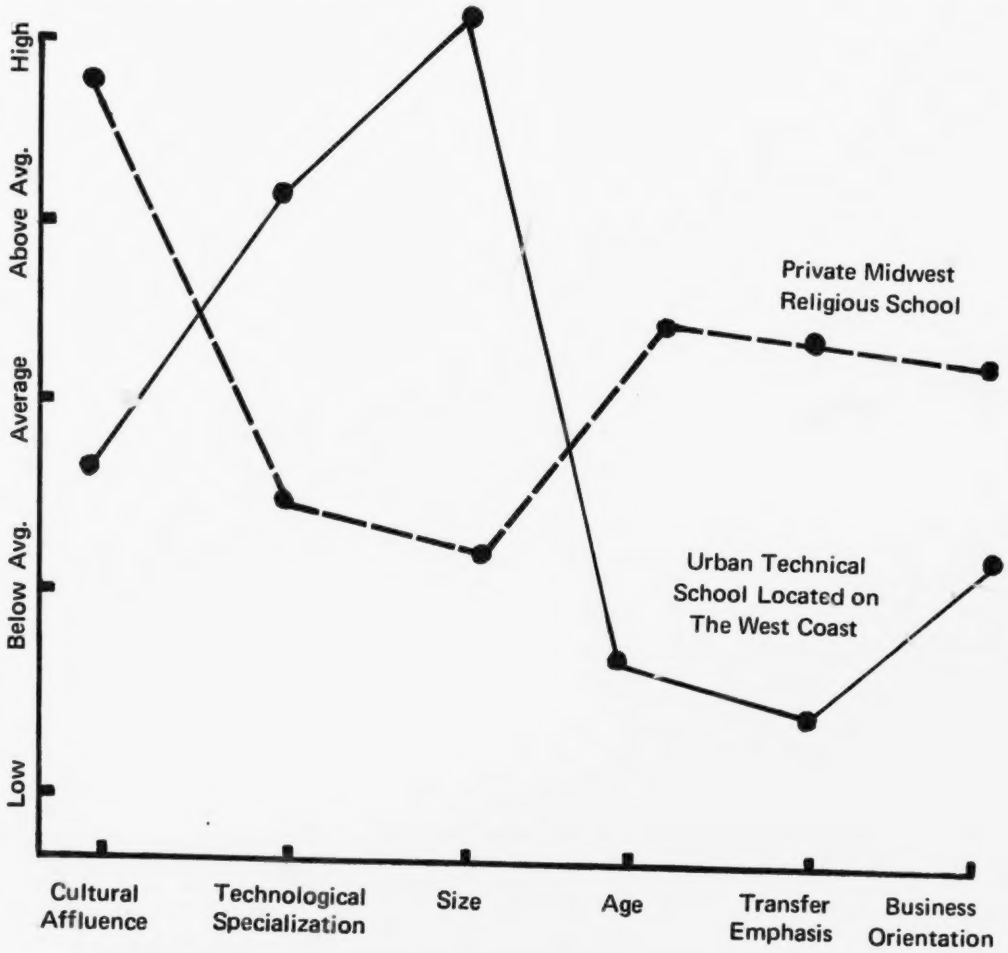

FIGURE 1 COMPARISON OF PROFILES
OF TWO JUNIOR COLLEGES ON SIX FACTOR SCORES

The primary goal of this study was to provide a brief profile which can be used to characterize junior colleges, and which will make possible more efficient research on the effects of junior colleges on their students. It seems clear that this goal was attained, for the original 36 scores were reduced to six factors which are reasonably clear and easily interpreted. The reduction to six representative factors provides a simple, economical set of items for assessing junior college environments in research on the ways in which different colleges affect student accomplishment and growth. We hope, however, that this profile will be regarded only as a first step, that junior colleges will now receive the attention from researchers that is warranted by their importance to society, and that this attention will in turn lead to better descriptive schemes, better studies of junior college effects, and, ultimately, to better junior colleges.

[1] *The authors are indebted to Max R. Raines, Renee M. Huntley, and H. Bradley Sagen for their critical reading of the manuscript.*

[2] *All computations for this study were carried out at the University of Utah Computer Center.*

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REGIONAL DIFFERENCES IN JUNIOR COLLEGES

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SUMMARY

This study examines the geographical distribution of various junior college characteristics. Scores for six factors or categories of college characteristics, identified in earlier ACT research, were computed for each of 581 accredited junior colleges. When these junior colleges were classified and analyzed by geographical region, significant differences were found among regions on all six factors–Cultural Affluence (or Private Control), Technological Specialization, Size, Age (or Conventionalism), Transfer Emphasis, and Business Orientation (or High Cost). The regional differences are discussed and implications are suggested for research and counseling as well as for junior college planning.

The junior college is a large and important segment of higher education in the United States, and it shows signs of becoming the largest and, in some respects, the most important. The increasing importance of junior colleges emphasizes the need for comprehensive information about these institutions. The interests of students, of colleges, and of society demand that plans for the future growth of junior colleges be as rational as possible, and based on accurate knowledge about such colleges.

The purpose of the present study is to examine the geographical distribution of various junior college characteristics. Such information may provide clues to the influences that mold and shape the structures of junior colleges, and to the major adaptive responses of the college as an organization. More important, it may provide illuminating information about the alternatives for the orderly development of junior colleges.

The basis for this research is the study by Richards, Rand, and Rand (1965) of junior college environments, in which 36 different characteristics of junior colleges were identified. Through use of factor analysis, the complex relationships among these 36 college characteristics were reduced to a limited number of categories that can be interpreted in terms of their underlying nature.

Six such categories, or factors, were obtained and given names which seemed to reflect their general meaning. These factors were Cultural Affluence, Technological Specialization, Size, Age, Transfer Emphasis, and Business Orientation. These factors organize the information currently available about junior colleges into a brief profile. This brief profile can be used to characterize individual junior colleges or groups of junior colleges. In the present study, the profile was used to describe junior colleges grouped according to their location.

METHOD

Estimation of Factor Scores. Using the data in *American Junior Colleges* (Gleazer, 1963), the first step in the present research was to estimate six factor scores for each of 581 accredited junior colleges. For each factor, three or four variables with high loadings on that factor and low loadings on all other factors were selected. Each variable was used in estimating only a single factor. Using the Doolittle procedure, multiple correlations were computed between variables and factors. The factor loadings served as validity coefficients; i.e., as the correlations between variables and factors. The variables chosen to represent each factor, the beta weight for each variable, and the multiple correlation between each group of variables and the corresponding factor are shown in Table 1.

TABLE 1

INSTITUTIONAL VARIABLES, BETA WEIGHTS, AND MULTIPLE CORRELATIONS FOR ESTIMATING FACTOR SCORES FOR JUNIOR COLLEGES

Factor	*Factor Loading*	*Beta*
Cultural Affluence (multiple correlation with factor = .85)		
1. Relative Library Size	.69	.3775
2. % of Foreign Students	.64	.4022
3. Faculty/Student Ratio	.50	.2241
4. Private vs. Public Control	.47	.1851
Technological Specialization (R = .83)		
1. Realistic Orientation	.73	.4044
2. Technological Emphasis	.67	.3351
3. % of Males in the Student Body	.64	.2741
Size (R = .89)		
1. Total Enrollment	.83	.5149
2. Variety of Curriculum	.66	.2931
3. Library Size	.67	.2614
Age (R = .87)		
1. Age	.67	.4700
2. % of Faculty which is Full-Time	.60	.3715
3. % of Part-Time Students	–.64	–.3380
Transfer Emphasis (R = .89)		
1. Teacher Training Emphasis	.68	.5924
2. % of Graduates going to Four-Year Colleges	.60	.4084
3. Liberal Arts Emphasis	.49	.2938
Business Orientation (R = .82)		
1. Enterprising Orientation	.57	.4582
2. % of Faculty with Doctoral Degree	.53	.4156
3. Tuition	.49	.3806

The multiple regression formula for each factor was determined from these beta weights, and was used to estimate a scaled factor score (with mean = 50 and standard deviation = 10) for each college. In computing the estimated factor scores, the mean was substituted for a missing score on any variable. Inspection of the score distributions suggested, however, that a normalizing transformation would be desirable, and that the precision of the factor scores would justify only a small range of transformed scores. Accordingly, the estimated factor scores were converted to stanines (Guilford, 1952, p. 503),[1] which are normalized standard scores with a mean of 5 and a standard deviation of 1.96.

Reinterpretation of Factors. Inspection of the high-scoring and low-scoring colleges on each factor suggested that the interpretation of three of the six factors should be modified. The fact that the factor scores suggested reinterpretation of some factors confirms the conclusion that this factor solution should be considered only a first approximation to the ordering of complex phenomena, and that the titles given the factors should not be taken too literally.

First, on the *Cultural Affluence* factor, colleges which traditionally have been considered highly affluent (Pine Manor, Gulf Park, etc.) do, for the most part, have high scores on this factor. There are also many colleges which have high scores which could not be considered affluent by any reasonable criterion. These colleges are typically very small colleges under private or religious control. Because many of the variables with high loadings on this factor were expressed in "per-student" terms, it is possible for a college with an extremely small library and an extremely small faculty to obtain a high score on this factor if it also has an extremely small student body. Moreover, public colleges with generally larger student bodies tended to obtain low scores on this factor, even those (such as Foothill) which appear quite affluent in the usual sense of the word. A better title for this factor, therefore, might be *Private Control.*

Second, the *Age* factor appears to require reinterpretation. In a recent article, Stanley (1965) attempts to identify the oldest junior college in the country. Several candidates for this distinction are mentioned. Unfortunately, the leading candidates have an average score on this factor which is only moderately high. This suggests that *Conventionalism* might be a better title for this factor since age alone without more traditional characteristics of colleges such as a high proportion of full-time faculty and full-time students, does not produce a high score.

Finally, the *Business Orientation* factor should be reinterpreted. Specifically the Enterprising Orientation variable (the percent of students specializing in such fields as business administration, marketing, etc.) seems less important in producing a high score on this variable than Tuition and the Percent of Faculty with Ph.D.'s. While these two variables give some suggestion of affluence, such an interpretation would be inconsistent with the low loadings on such variables as Endowment and Relative Library Size obtained in the earlier study of junior colleges (Richards et al., 1965). Therefore, a better title for this factor might be *High Cost.*[2]

Analysis of Regional Differences. Seventeen colleges of the original 581 have become four-year colleges or have closed since *American Junior Colleges* (Gleazer, 1963) was published. These 17 colleges were excluded from the analysis of regional differences. The remaining 564 colleges were grouped into seven regions: New England, Mideast, Great Lakes, Plains, Southeast, Southwest and Rocky Mountains, and Far West. The states included in these regions are shown in Table 2.

TABLE 2

STATES INCLUDED IN REGIONS FOR STUDY OF REGIONAL DIFFERENCES IN JUNIOR COLLEGE CHARACTERISTICS

New England includes:
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

Mideast includes:
Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania

Great Lakes includes:
Illinois, Indiana, Michigan, Ohio, Wisconsin

Plains includes:
Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

Southeast includes:
Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia

Southwest and Rocky Mountains includes:
Arizona, Colorado, Idaho, Montana, New Mexico, Oklahoma, Texas, Utah, Wyoming

Far West includes:
Alaska, California, Hawaii, Nevada, Oregon, Washington

The next step was to compute the mean and standard deviation on each factor for each region and for the total sample. Results are summarized in Table 3.

TABLE 3

MEANS AND STANDARD DEVIATIONS OF JUNIOR COLLEGE CHARACTERISTICS BY REGIONS

Region	*Cultural Affluence (Private Control)*	*Technological Specialization*	*Size*	*Age (Conventionalism)*	*Transfer Emphasis*	*Business Orientation (High Cost)*
New England (N = 41)						
Mean	5.56	4.07	4.07	5.02	3.54	7.17
S. D.	1.98	2.65	1.58	1.88	1.43	1.62
Mideast (N = 80)						
Mean	5.04	5.40	4.54	4.28	3.88	6.48
S. D.	1.96	2.47	1.59	1.94	2.05	1.48
Great Lakes (N = 60)						
Mean	4.30	5.55	5.33	4.22	5.32	5.58
S. D.	2.15	1.75	1.99	1.86	1.75	1.41
Plains (N = 74)						
Mean	5.07	4.88	4.68	5.80	5.66	3.95
S. D.	1.76	1.64	1.53	1.33	1.56	1.71
Southeast (N = 134)						
Mean	5.42	4.20	4.29	5.75	4.97	4.62
S. D.	1.68	1.86	1.59	1.95	1.77	1.71
Southwest & Rocky Mountains (N = 77)						
Mean	5.22	5.14	5.38	5.39	5.61	4.48
S. D.	1.81	1.43	1.64	1.64	1.67	1.53
Far West (N = 98)						
Mean	4.44	5.61	6.79	4.02	4.83	4.17
S. D.	1.58	1.17	1.94	1.80	1.70	1.46
Total (N = 564)						
Mean	5.01	4.97	5.05	4.98	4.90	4.99
S. D.	1.86	1.93	1.92	1.94	1.86	1.87

One could make a strong case for the proposition that the total group of junior colleges for this study is the population, and that therefore statistical tests of the significance of differences are both unnecessary and meaningless. There is also some doubt as to the appropriateness of analyzing group differences on normalized scores using the same group on which the transformation was based, since the between variance depends on the within variance. Nevertheless, an objective way was needed for deciding which differences will be considered important and for estimating which differences are greater than might be expected for groups of the same size chosen at random from the total population of junior colleges. Therefore, standard statistical analyses were made of the mean differences. A simple analysis of variance was computed across the seven regions on each of the six variables. Results are shown in Table 4.

TABLE 4

ANALYSIS OF VARIANCE OF REGIONAL DIFFERENCES IN JUNIOR COLLEGE CHARACTERISTICS

Factor	*M. S. for Groups*	*M. S. for Errors*	*F*
Cultural Affluence (Private Control)	**16.89**	**3.32**	**5.09****
Technological Specialization	**31.85**	**3.47**	**9.18****
Size	**76.12**	**2.93**	**25.98****
Age (Conventionalism)	**50.87**	**3.26**	**15.61****
Transfer Emphasis	**42.40**	**3.06**	**13.86****
Business Orientation (High Cost)	**96.24**	**2.52**	**38.19****

*$^*p < .05$
$^{**}p < .01$
degrees of freedom = 6/557*

The last step in the analysis was to make comparisons among the regional means. On each factor the Newman-Keuls method (Winer, 1962) was used to compare all possible pairs of means. This procedure seems to be the most satisfactory method currently available for making "post-hoc" comparisons, such as were made in this study. The comparisons of means are summarized in Table 5.

TABLE 5

SUMMARY OF STATISTICAL ANALYSIS OF REGIONAL DIFFERENCES IN JUNIOR COLLEGE CHARACTERISTICS

Comparison	*Cultural Affluence (Private Control)*	*Technological Specialization*	*Size*	*Age (Conventionalism)*	*Transfer Emphasis*	*Business Orientation (High Cost)*
1. New England Colleges to:						
a. Mideast Colleges	n. s. d.	lower**	n. s. d.	higher*	n. s. d.	higher**
b. Great Lakes Colleges	higher**	lower**	lower**	higher*	lower**	higher**
c. Plains Colleges	n. s. d.	lower*	n. s. d.	lower*	lower**	higher**
d. Southeast Colleges	n. s. d.	n. s. d.	n. s. d.	lower*	lower**	higher**
e. Southwest & Rocky Mountains Colleges	n. s. d.	lower**	lower**	n. s. d.	lower**	higher**
f. Far West Colleges	higher**	lower**	lower**	higher**	lower**	higher**
2. Mideast Colleges to:						
a. New England Colleges	n. s. d.	higher**	n. s. d.	lower*	n. s. d.	lower**
b. Great Lakes Colleges	n. s. d.[1]	n. s. d.	lower*	n. s. d.	lower**	higher**
c. Plains Colleges	n. s. d.	n. s. d.	n. s. d.	lower**	lower**	higher**
d. Southeast Colleges	n. s. d.	higher**	n. s. d.	lower**	lower**	higher**
e. Southwest & Rocky Mountains Colleges	n. s. d.	n. s. d.	lower*	lower**	lower**	higher**
f. Far West Colleges	n. s. d.[1]	n. s. d.	lower**	n. s. d.	lower**	higher**
3. Great Lakes Colleges to:						
a. New England Colleges	lower**	higher**	higher**	lower*	higher**	lower**
b. Mideast Colleges	n. s. d.[1]	n. s. d.	higher*	n. s. d.	higher**	lower**
c. Plains Colleges	n. s. d.	n. s. d.	higher*	lower**	n. s. d.	higher**
d. Southeast Colleges	lower*	higher**	higher**	lower**	n. s. d.	higher**
e. Southwest & Rocky Mountains Colleges	lower*	n. s. d.	n. s. d.	lower**	n. s. d.	higher**
f. Far West Colleges	n. s. d.	n. s. d.	lower**	n. s. d.	n. s. d.	higher**
4. Plains Colleges to:						
a. New England Colleges	n. s. d.	higher*	n. s. d.	higher*	higher**	lower**
b. Mideast Colleges	n. s. d.	n. s. d.	n. s. d.	higher**	higher**	lower**
c. Great Lakes Colleges	n. s. d.	n. s. d.	lower*	higher**	n. s. d.	lower**
d. Southeast Colleges	n. s. d.	higher*	n. s. d.	n. s. d.	n. s. d.	n. s. d.
e. Southwest & Rocky Mountains Colleges	n. s. d.	n. s. d.	lower*	n. s. d.	n. s. d.	n. s. d.
f. Far West Colleges	n. s. d.	n. s. d.	lower**	higher**	higher*	n. s. d.
5. Southeast Colleges to:						
a. New England Colleges	n. s. d.	n. s. d.	n. s. d.	higher*	higher**	lower**
b. Mideast Colleges	n. s. d.	lower**	n. s. d.	higher**	higher**	lower**
c. Great Lakes Colleges	higher*	lower**	lower**	higher**	n. s. d.	lower**
d. Plains Colleges	n. s. d.	lower*	n. s. d.	n. s. d.	n. s. d.	n. s. d.

TABLE 5 (continued)

	Cultural Affluence (Private Control)	*Technological Specialization*	*Size*	*Age (Conventionalism)*	*Transfer Emphasis*	*Business Orientation (High Cost)*
e. Southwest & Rocky Mountains Colleges	n. s. d.	lower*	lower**	n. s. d.	n. s. d.	n. s. d.
f. Far West Colleges	higher*	lower**	lower**	higher**	n. s. d.	n. s. d.
6. Southwest & Rocky Mountains Colleges to:						
a. New England Colleges	n. s. d.	higher**	higher**	n. s. d.	higher**	lower**
b. Mideast Colleges	n. s. d.	n. s. d.	higher*	higher**	higher**	lower**
c. Great Lakes Colleges	higher*	n. s. d.	n. s. d.	higher**	n. s. d.	lower**
d. Plains Colleges	n. s. d.	n. s. d.	higher*	n. s. d.	n. s. d.	n. s. d.
e. Southeast Colleges	n. s. d.	higher*	higher**	n. s. d.	n. s. d.	n. s. d.
f. Far West Colleges	higher*	n. s. d.	lower**	higher**	higher**	n. s. d.
7. Far West Colleges to:						
a. New England Colleges	lower**	higher**	higher**	lower**	higher**	lower**
b. Mideast Colleges	n. s. d.[1]	n. s. d.	higher**	n. s. d.	higher**	lower**
c. Great Lakes Colleges	n. s. d.	n. s. d.	higher**	n. s. d.	n. s. d.	lower**
d. Plains Colleges	n. s. d.	n. s. d.	higher**	lower**	lower*	n. s. d.
e. Southeast Colleges	lower*	higher**	higher**	lower**	n. s. d.	n. s. d.
f. Southwest & Rocky Mountains Colleges	lower*	n. s. d.	higher**	lower**	lower**	n. s. d.

$^{*}p < .05$

$^{**}p < .01$

[1] *These differences exceed the critical Neuman-Keuls value, but since the next larger value was not significant, they are not considered significant.*

DISCUSSION

The results shown in Tables 4 and 5 reveal that there are regional differences among junior colleges on all six characteristics. These differences may have important implications for counseling, for research, and for planning for future junior colleges.[3] The differences, and some of their implications, are summarized below.

On the *Cultural Affluence,* or *Private Control* factor the main trend seems to be for colleges in the Great Lakes states and in the Far West to be lower than colleges in other regions. No doubt this results in part from a general emphasis in these states on public education. It is also possible that junior colleges in these regions have modeled themselves after state universities, or have sought an identity of their own, rather than imitating private liberal arts colleges.

The major trend on the *Technological Specialization* factor is for colleges in New England and in the Southeast to be lower than colleges in other regions. This trend may be related to different conceptions of the role of the junior college, and a de-emphasis of vocational training related to community occupational needs, or to general social conditions such as a predominance of agriculture over industry in much of the South. This general picture may change, therefore, as a result of such changes in American society as increasing industrialization of the South.

The major trend on the *Size* factor is for colleges in the Far West to be larger than colleges in other regions. Colleges in the Great Lakes states and in the Southwest and Rocky Mountains states also tend to be relatively large. It is interesting that this pattern does not follow very closely the distribution of population in the country. This suggests that sociological or political factors, rather than need, may have produced this pattern with the result that the various regions of the country may not offer students equal opportunity for junior college education. The strong tendency for colleges in the Far West to be very large results mainly from the pattern of higher education in California, which, of course, results in turn from a carefully thought-out plan for coordinating junior colleges with other institutions of higher education.

On the *Age* or *Conventionalism* factor, colleges in the Southeast, Southwest and Rockies, and Plains states are high while colleges in the Far West are low. A number of trends, no doubt, produced this pattern. Many of the Negro junior colleges in the South are quite old (as junior colleges go), although in many cases they were not established as two-year colleges. Such colleges are also unlikely to be very innovative because of socio-political conditions in the South. Similarly, many of the junior colleges in California have been established very recently. In New England, the region where many of the oldest and most traditional four-year colleges are located, the junior colleges are only average on this factor.

On *Transfer Emphasis,* colleges in New England and in the Mideast are extremely low, with few significant differences among other regions. This trend no doubt results from the fact that higher education in these two regions is dominated by a few private, affluent, and prestigious four-year colleges and universities. These institutions are highly selective in admitting freshmen, and in general have little interest in admitting transfer students at the junior level. Also, it may be that other regions of the country (particularly the Midwest) offer much teacher training in junior colleges, while in New England and the Mideast such training is more restricted to four-year teachers colleges. Such different patterns of teacher education and accreditation may, in part, produce the relatively low score on *Transfer Emphasis* for New England and the Mideast.

The major trend on the *Business Orientation,* or *High Cost* factor is for colleges in New England, the Mideast, and the Great Lakes to be much higher than colleges in other regions. It is probable that *High Cost* is a better title for this pattern than is *Business Orientation.* It is also probable that these differences merely reflect a general pattern in higher education in the various regions, and that much the same pattern would have been obtained if the cost of attending four-year colleges had been considered.

The implications of this study for research appear obvious. If a researcher wishes to investigate general trends in junior college education, he should be careful to sample representatively from the various regions of the country. It appears that obtaining a sample in only one region is not a convenient shortcut to overcome the difficulties of obtaining a national sample, since different results would probably be obtained from a sample of New England colleges than would be obtained from a sample of Far West colleges.

Similar implications for student counseling can be drawn from these results. Such counseling should, of course, be based on the characteristics of the particular junior college under consideration. The results of this study, however, do provide a useful general orientation, and do suggest important matters that should be considered in the counseling process. For example, if a student wishes to obtain technological training, the counselor probably should give him different advice if he lives in the Southeast than if he lives in the Far West. Similarly a student aspiring to the bachelor's degree but wishing to economize by attending a local junior college for the first two years while continuing to live with his parents probably should receive different advice depending on whether he lives in New England or in the Plains states.

Finally, these results may provide clues to needs of students or of society that are not being fully met by existing junior colleges in any given region of the country. Such needs might be given special consideration in planning for new junior colleges in that region.

[1] *A Xerox copy of the table showing the stanine score for each college on each factor is available for $1 from the Research and Development Division, American College Testing Program, Box 168, Iowa City, Iowa 52240. Please remit payment with order. Make checks payable to: American College Testing Program.*

[2] *It should be noted, however, that Deep Springs College, which has no tuition since all students receive full scholarships, obtained the highest possible score (9) on this factor. This appears to be a result of a very high proportion of Ph.D.'s on the faculty (3 of 6) combined with substituting the mean for the missing Enterprising Orientation score.*

[3] *In this connection, it should be noted that approximately 200 junior colleges have been established since* American Junior Colleges *(Gleazer, 1963) was published. At the present time, no source of comprehensive information about the characteristics of these colleges is available.*

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PART II:
STUDENTS AT TWO-YEAR COLLEGES

INTRODUCTION

One way to assess the results of two years of college is to ask students finishing their second year to reflect on their campus experience. Various questions can be raised for their consideration. For example, what are their personal educational goals? How do they evaluate their college teachers? What is the extent of their campus participation in various activities? What are their educational and vocational plans? What is the degree of satisfaction with their educational participation? To what extent do they have a sense of their own progress? A study taking such an approach is reported in *A Description of Graduates of Two-Year Colleges.*

To collect this information, we administered a survey instrument in the spring of 1967 to 4,009 sophomore students at 29 two-year colleges across the country. The results of this student survey are presented item by item through tables in the report, with figures showing the percent of students choosing each response.

The typical student reported that he had attended high school just before entering college and, since entering the two-year college, had been preparing for transfer to a four-year institution. He aspires to a bachelor's degree and sees securing vocational training as the most important goal in attending college. He generally responds favorably to his college teachers; they rank highest in his judgment in knowledge of subject matter and overall ability as teachers but lowest in stimulating outside reading and as counselors or advisors. He is not active in campus extracurricular activities and reports few nonacademic achievements.

When the typical two-year college student focused on future plans, he reported that he intended to transfer to a four-year college and had not changed his plans in this respect since entering college. He mostly senses progress in the broad understanding and appreciation gained in his field, the better comprehension of contemporary thought, and the greater awareness of community needs. He can, in summary, be described as being at least "somewhat satisfied" with what the college has done for him.

Not surprisingly, he financed his education by working and by receiving help from his parents. He is a commuter and in all likelihood drives a car to campus. He studies at home and spends little leisure time on campus.

Detailed analysis was made of the effects of working and commuting on other student behavior. Contrary to the general expectation, working and commuting do not seem to be related to anything. They are unrelated to student plans, out-of-class activities, attitudes to teachers and teaching methods, and satisfaction with college.

Studies of the flow of college-bound students to institutions of higher education show that the two-year college gets a special segment of this population. And among two-year colleges themselves, certain kinds of students are likely to go to certain kinds of institutions. To document these trends and better characterize the college-bound students going to different places, the study *Who Goes Where to Junior College?* was concluded.

In the ACT study involving a factor analysis of 36 institutional characteristics of two-year colleges previously discussed in this monograph, six factor scores were labeled, Cultural Affluence, Technological Specialization, Size, Age, Transfer Emphasis, and Business Orientation. They seem to be descriptive of two-year college institutional characteristics. Scores on these six institutional factors for each accredited two-year college were then computed. These factor scores appear in the appendix of this monograph.

Class Profile Service data describing students enrolled at 102 two-year colleges were available for institutions for which factor scores were computed. To permit a comparison between the characteristics of students at two-year versus four-year colleges, 1965-66 Class Profile Service data for 179 four-year colleges were also collected from Research Service files. The Class Profile Service reports routinely provide colleges with a broad range of test and survey information about their students. Using the institutional factor scores and the Class Profile Service data, we were then able to relate institutions to students to see what kinds of students go to what kinds of colleges.

Students entering two-year colleges were found to be less able in terms of academic potential and to have fewer non-academic high school accomplishments than their peers in four-year colleges. The two-year college students chose their institutions for practical reasons, and also chose such "practical" careers as business and agriculture. They tended to aspire more often than their counterparts in four-year colleges, to less than a bachelor's degree.

When students attending different kinds of two-year colleges, as characterized by the six factors, were compared with each other, the results not only confirmed general impressions of two-year colleges in the country, but also supported the notion that to some extent a "matching" of students and college characteristics occurs. However, this "matching" does not occur with great precision and probably for several reasons. From a common sense standpoint the educational content of the institutional factors and the student characteristics are not strictly comparable. Institutional factors are not defined with as much clarity as they might be. Probably the pattern of college choice and attendance involves "matching" student and institutional characteristics only to a limited degree. More likely a great student overlap from college to college occurs because students in the main choose their colleges for reasons of proximity and cost.

A vital kind of instruction within higher education is the vocational-technical curricula offered by many two-year colleges. What kind of students select vocational-technical curricula? The answer to this question can shape both the curricula and the recruitment procedures. There are implications as well for the role vocational-technical schools should play within the spectrum of post-secondary institutions generally, and what avenues these curricula provide for upward and downward social mobility. In other words, what is the social meaning of these institutions? We sought the answer in the characteristics of high school seniors planning to enter vocational-technical education. Our study is reported in *Who Selects Vocational-Technical Post-High School Education?*

We were not surprised to learn that academic aptitude and family background were related to post-high school plans. But the overall pattern was not anticipated. Vocational-technical education tends to attract students with high aptitude and low family socio-economic status (SES), or low aptitude and high family SES. Vocational-technical students are likely to be "underachievers": to have higher aptitude than achievement in school. The presence of a vocational-technical educational institution in a community stimulates low aptitude students to attend these schools.

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A DESCRIPTION OF GRADUATES OF TWO-YEAR COLLEGES

Leonard L. Baird
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SUMMARY

This study examined the college experiences and achievements of a large sample of two-year college graduates. The data were obtained from a comprehensive follow-up survey administered to second-year students at 29 two-year colleges. Students responded to items regarding their backgrounds and plans, participation in non-academic activities, financial and work status, and general satisfaction with college. The majority of students planned to transfer to a four-year college. Students were satisfied with most aspects of their instructors' performance, and described them as clear, factual, consistent, and concerned with their students. Students typically participated in several areas of extracurricular activity, but seldom "achieved" by attaining public recognition of their accomplishment. Most students worked at least part of their two-year college careers and most commuted to campus. However, working or commuting were found to have little effect on the college experiences or achievements of two-year college students. Finally, graduates were generally satisfied with their two-year college. Some supposed problems of two-year colleges were found to be real; others, such as student time spent in working or commuting were not as great as might be expected.

This report describes a study designed to provide useful information about two-year colleges and their students. The two-year college is an important topic of study for many reasons. First, two-year colleges educate great numbers of students (current enrollment estimates place the number at about a million and a half). They also provide the first college experience for increasing numbers of students. (Currently, approximately one-third of entering freshmen attend two-year colleges, projections indicate that over one-half of entering freshmen will enroll in two-year colleges by 1975.) In addition, two-year colleges serve many needs not met by four-year institutions: special occupational curricula, adult education, and two years of general education for students who do not wish to obtain a bachelor's degree. Perhaps most important, they meet the need for low-cost education for increasing numbers of high school graduates.

These very factors which contribute to the importance of two-year colleges also create many problems for them. They must handle constantly increasing enrollments. Many of their students are the first in their families to attend college, and they need to be oriented to the collegiate way of life. Many public two-year colleges are required to have open door admission policies and, consequently, have high attrition among their students. Furthermore, two-year colleges must maintain very diverse curricula and facilities for transfer and vocationally oriented students. Finally, two-year colleges often have large numbers of commuting, working, and adult students. Each of these groups has special needs.

Because of their important role in American higher education and the problems which stem from this role, we need to know much more about two-year colleges and their students. The present study was planned to provide such information. It differs from previous studies in several respects. First, it includes a comprehensive survey of the development, plans, achievements, and reactions of two-year college students. Second, we hoped to obtain information that would be useful to many colleges by studying a large number of students in a variety of two-year colleges. Finally, we studied students in the second semester of their second year, rather than in their freshmen year.

STUDENTS

We obtained data for the present study as part of a comprehensive follow-up of students who took the ACT battery in 1965 and were completing their second year in a two-year college in the spring of 1967. The follow-up questionnaire was administered to 4,009 students at 29 two-year colleges.

The number at individual colleges varied from 22 to 490, with a median of 111.

Table 1 shows the means and standard deviations for this group on the ACT tests, high school grades, and high school non-academic achievements. Our sample clearly represents a broad range of talent. It appears unlikely, therefore, that our results are seriously distorted by biases in the sample of students.[1]

TABLE 1

MEANS OF STUDENTS
IN FOLLOW-UP SAMPLE ON ACT TESTS
AND HIGH SCHOOL ACHIEVEMENTS

	Men		Women	
Variables	*Mean*	*S. D.*	*Mean*	*S. D.*
ACT English	17.0	4.6	19.4	4.4
ACT Math	20.1	5.8	17.1	5.6
ACT Social Studies	20.1	5.8	20.2	5.8
ACT Natural Science	20.8	5.9	19.4	5.5
HS GPA	2.42	.65	2.66	.66
HS Leadership Achievement	1.86	1.9	2.11	1.9
HS Music	1.11	1.7	1.87	1.9
HS Drama	1.06	1.5	1.39	1.6
HS Art	.49	1.2	.70	1.4
HS Writing	.62	1.2	1.00	1.4
HS Science	.85	1.5	.67	1.1

THE COLLEGES

The colleges participating in this study are quite diverse: 21 are public, 4 are independent, and 4 are church-related. Geographically, 2 are in the Northeastern states, 4 in the Southeastern states, 5 in the Great Lakes states, 6 in the Plains states, 7 in the Southwest and Mountain states, and 4 in the Far West states. About one-half (15) offer on-campus housing. The colleges had enrollments ranging from 175 students to nearly 13,000. Four colleges had enrollments of less than 500 students, and five had enrollments larger than 4,000. One was a women's college, another was predominantly for men. Two are among the oldest two-year colleges in the United States, while several were established quite recently. Two are associated with universities. One has received awards and national attention for its architecture and landscape design. Another was the subject of a sociological case study.

To discover the extent to which the sample colleges were like American two-year colleges in general, we examined the scores the sample colleges obtained in a study of two-year college environments (Richards, Rand, & Rand, 1966, 1967). By means of factor analysis, six scores were identified for describing two-year college environments: Private Control (or Cultural Affluence), Technological Specialization, Size, Conventionalism (or Age), Transfer Emphasis, and High Cost (Business Orientation). Estimated scores for these factors are computed in the form of stanines, which are normalized standard scores, ranging from 1 to 9, with a mean of 5 and a standard deviation of 1.96. The means and standard deviations for the sample colleges on the environmental description scales were computed. Results are summarized in Table 2. The sample appears to be close to the national norms on all scales except size, and the discrepancy on this scale is probably due to the small number of very small two-year colleges in the sample. Perhaps more important is the fact that the standard deviations indicate that the sample colleges are diverse on all scales. Thus, the sample colleges appear to be a reasonable cross-section of American two-year colleges.

TABLE 2

MEAN AND STANDARD DEVIATION
OF SAMPLE COLLEGES
ON ENVIRONMENTAL DESCRIPTION SCALES

Environmental Variable	*Mean*	*S. D.*
Private control (Cultural affl.)	5.00	1.89
Technical specialization	5.29	1.82
Size	5.68	1.52
Conventionalism (Age)	5.14	2.05
Transfer emphasis	5.18	1.81
High cost (Business orientation)	4.82	1.70

Note. Data were unavailable for one college, so these means are based on an N of 28 institutions.

RESULTS

The follow-up questionnaire was designed to provide comprehensive information about two-year college students, including items about students' backgrounds and purposes in attending college, evaluations of teachers, participation and achievement, future plans, general college satisfaction, sense of progress, finances, working and commuting. We will describe each of these areas in turn.

Background and purposes. Students were asked to indicate what they were doing just before they first entered their present colleges. Then students indicated their major purpose in attending college and their most important goal while there. (For a more complete discussion of the interpretation of these goals, see Baird, 1967.) Finally, students checked the highest level of education they expected to complete.

Table 3 shows the responses of the sample students to these items. Most students (69.2%) were attending high school before they entered their

TABLE 3

PERCENT OF TWO-YEAR COLLEGE STUDENTS CHOOSING EACH RESPONSE TO BACKGROUND AND PLANS ITEMS

Item and Response	Percent
What were you doing just before you first entered your present college?	
Attending high school	69.2
Working on a job full- or part-time	16.3
Looking for work	.4
In the U.S. Armed Services	2.5
Attending another junior college or trade school	2.0
Attending a four-year college	4.9
Other	2.7
What has been your major purpose while attending your college?	
Have been preparing for a specific job in the local area	4.8
Have been obtaining general preparation for employment	11.8
Have been preparing for transfer to a four-year institution	58.3
Have been trying to increase my general knowledge and level of education	24.0
What is the highest level of education you expect to complete?	
Junior college degree	10.5
Bachelor's degree or equivalent	44.2
One or two years of graduate or professional study (M.A., M.B.A., etc.)	34.9
Doctor of Philosophy (Ph.D.)	3.8
Doctor of Medicine (M.D.)	1.0
Doctor of Dental Surgery (D.D.S.)	.4
Bachelor of Laws (L.L.B.)	1.8
Bachelor of Divinity (B.D.)	.5
Other	2.0
What is your most important goal in attending college?	
To learn how to enjoy life	1.2
To develop my mind and intellectual abilities	33.2
To secure vocational or professional training	45.5
To make a desirable marriage	.5
To earn a higher income	10.8
To develop moral standards	.1
To become a cultured person	2.0
To develop my personality	1.1
To develop a satisfying philosophy	1.8
None of these	4.0

college, and a sizable minority (16.3%) were working. Nearly 5% had been attending a four-year college. When asked to indicate their major purpose in attending their college, only a minority of students indicated that they had been preparing for employment, while 58.3% said they were preparing for transfer and 24.0% said they had been trying to increase their general knowledge.

Students' degree aspirations were consistent with their emphasis on transfer. While 10.5% expected to complete only a two-year college education, 44.2% expected to obtain a bachelor's degree, 34.9% expected to obtain a master's, and 7.5% planned some professional level degree (PhD, MD, DDS, LLB, or BD).

It is sometimes asserted that two-year college students are almost exclusively oriented toward jobs and employment. As shown in Table 3, students did choose the goal of securing "vocational or professional training" more frequently than any other goal. However, 37.0% chose goals that are in some sense intellectual: "to develop my mind and intellectual ability," "to become a cultured person," and "to develop a satisfying philosophy." Thus, while the majority of two-year college students are oriented toward their future careers (as are the majority of students in four-year colleges), many students have goals that are consistent with the values of general liberal education.

Evaluation of teachers. A teacher's "style" of teaching can influence not only how much a student learns but *what* he learns. The *kind* of learning instructors emphasize shows what they think most valuable to know. While teaching style is important in every educational setting, it is especially crucial in two-year colleges, since such colleges have very diverse curricula and serve students with a wide range of talents and personal characteristics. Therefore, to obtain information about teaching styles in two-year colleges, we asked students to describe teaching practices at their colleges by answering 33 true-false items. The items concerned examinations, classroom procedures, instructor-student interaction, assignments, and instructor attitudes.

The percentages of students who say each teaching practice is generally characteristic of most of their instructors are shown in Table 4. Apparently instruction in two-year colleges tends to emphasize facts and specific information (items 1, 2, 3, 4). Instructors also seem clear about what they want of students (items 5, 6, 7, 8). Class discussions seem to be common (items 9, 10). Students feel that instructors are concerned with keeping up with the latest developments in their own field (item 11), and that assignments are designed to give the student an understanding of the current state of the field (item 12). Although students feel that instructors like their students (13), they also report that professors seldom go for coffee or sandwiches with students after class (14). Apparently friendliness is not the same as familiarity. Although students think instructors want each student to consider his own set of values and outlook (15), exams do not often ask broad general questions about some current topic (16). It seems, then, that two-year college instructors are generally clear, emphasize specific knowledge, often use class discussions and are friendly.

The items on which there is least consensus (i.e., the overall percentage is between 40 and 60%) are item 17, "The instructors ask many questions in class," item 18, "Questions on exams often ask students to contrast two or more views of given topics," and item 19, "Most questions instructors ask in class are about disputes and different interpretations of facts in their fields."

Teaching practices vary from college to college. For example, on items 14, 18, 20, 21, and 22, there is a range of over 50 percentage points between the lowest scoring and highest scoring colleges. Thus, instruction is not the same in all colleges. Other items (23-33) did not receive a consensus of strong agreement or disagreement. Finally, instructors are rarely sarcastic (item 31).

TABLE 4

PERCENTAGE OF STUDENTS INDICATING EACH TEACHING PRACTICE IS CHARACTERISTIC OF THEIR INSTRUCTORS

	Range of Percentages		
	Overall average	*Lowest college*	*Highest college*
1. Examinations emphasize recall of particular items of information about the subject	94.8	83.0	100.0
2. Instructors are most concerned with conveying specific information about their subject matter	84.6	71.7	95.7
3. Assignments are designed to give students a thorough knowledge of the facts about the subject	87.1	77.8	94.9
4. Lectures place a great deal of emphasis on specific details	72.1	53.7	81.3
5. In many classes, it is hard for a student to know how well he is doing	23.3	10.9	37.3
6. Professors seem to keep changing their minds about what they require from students	17.0	10.1	32.7

TABLE 4

PERCENTAGE OF STUDENTS INDICATING EACH TEACHING PRACTICE IS CHARACTERISTIC OF THEIR INSTRUCTORS

	Range of Percentages		
	Overall average	*Lowest college*	*Highest college*
7. Professors sometimes ask students to do two conflicting things at the same time	13.8	5.9	35.8
8. Professors are often so vague about what they want in assignments, tests, etc., that students have to ask many questions to find out what they mean	21.8	13.3	40.9
9. There is some time given to student discussion in almost every class period	75.2	57.1	91.8
10. Instructors do not encourage questions from the class	10.4	4.6	18.9
11. The instructors seem to be concerned with keeping up with the latest development in their own field	92.2	79.2	97.6
12. Assignments are designed to give the student an understanding of the current state of the field	83.1	68.2	89.8
13. Instructors really seem to like their students	90.6	77.8	94.1
14. Instructors often go for coffee or snack with students after class	19.9	3.2	55.7
15. Instructors want each student to consider his own set of values and outlook	79.7	64.7	91.5
16. Examinations usually ask broad general questions, often about some current topic, which could have many kinds of answers	23.9	12.6	37.7
17. The instructors ask many questions in class	41.0	14.6	59.4
18. Questions on exams often ask students to contrast two or more views of given topics	49.6	14.7	73.5
19. Most questions instructors ask in class are about disputes and different interpretations of facts in their fields	43.3	26.9	61.2

TABLE 4

PERCENTAGE OF STUDENTS INDICATING EACH TEACHING PRACTICE IS CHARACTERISTIC OF THEIR INSTRUCTORS

	Range of Percentages		
	Overall average	*Lowest college*	*Highest college*
20. Instructors are mostly interested in their students in an academic rather than personal sense	62.7	23.5	79.6
21. Assignments are designed to broaden students' views of life	65.0	23.5	78.4
22. Instructors seem concerned with understanding the general implications of ideas in everyday life	71.1	40.9	91.2
23. It is often hard to know just what professors want in their student's work	33.5	23.5	47.2
24. The instructors try to teach students methods of gathering and evaluating information in their field	71.6	53.7	82.1
25. There is quite a bit of laughter or joking in many classes	31.9	19.1	44.6
26. Professors try to tell each student clearly how well he is doing, and how well he has met their expectations	32.5	9.8	48.2
27. Students are often asked to give verbal reports of assignments	26.3	12.0	50.9
28. The instructors try to help students develop a view of their place in the world	71.0	52.9	88.9
29. Instructors try to cover every area in their subject in minute detail	19.2	6.5	35.8
30. Student participation is an important part of most class work	62.6	45.3	79.4
31. Instructors are often sarcastic or critical of students in class	10.1	0.0	22.7
32. Instructors seem to want to see if each student has done the current assignment	62.1	39.0	83.0
33. When students have difficulty responding to a question, instructors will help them answer	73.3	60.6	80.1

Students were also asked to form a general overall impression of their teachers and rate them on a four-point scale: somewhat inadequate, fairly capable, very capable, and extremely capable. The student ratings of faculty members are shown in Table 5. Students tend to give high ratings to their teachers' knowledge of their subject matter and their overall ability as teachers. (Similar figures have been reported by Kneoll and Medsker, 1964.) In contrast, the average two-year college faculty member seems to have a harder time stimulating students to do reading in the field beyond class work.

In summary, two-year college students tend to describe their instructors as clear, factual, consistent, and concerned with their students. The students also were very satisfied with most aspects of their instructor's performance.

TABLE 5

STUDENT RATINGS OF FACULTY CAPABILITY
(PERCENTAGE CHOOSING EACH ALTERNATIVE)

These items ask you to describe the faculty of your college. You should try to form a general overall impression of them as a group.

Rate your teachers on their:	*Inadeq*	*F cap*	*V cap*	*E cap*	*M data*[a]
Knowledge of their subject matter	.6	11.2	60.2	25.0	3.0
Overall ability as teachers	1.8	24.2	60.5	10.5	3.0
Ability as counselors or advisors	14.8	37.9	33.7	10.0	3.6
Ability to stimulate students to think	6.7	38.0	41.5	9.8	4.1
Ability to stimulate students to do reading in the field beyond class work	26.8	50.1	16.3	3.1	3.6
Ability to make their subject interesting	5.2	36.6	44.3	10.6	3.3

[a] *Headings are: somewhat inadequate, fairly capable, very capable, extremely capable, and missing data.*

Participation and nonacademic achievement. College administrators are often concerned lest their college be a mere commuters' campus, with students coming only to attend classes, not participating in the extracurricular life of the campus, and consequently not developing an identification with their college. In order to provide information about the extent of such student concern, we studied the rate of extracurricular participation, an important index of students' involvement with their college. We asked students whether they had participated in nine areas of extracurricular activity during college.

The rate of participation in various activities and the range across the colleges in our sample is shown in Table 6. Participation in departmental clubs and intramural athletics is fairly common, but participation in other areas is uncommon, especially in debate, acting, and science clubs. Checklists of extracurricular accomplishment also yielded scores in the following areas: leadership, social participation, social service, music, drama and speech, art, writing, science, business, humanities, and social science (Richards, Holland, & Lutz, 1967). Each scale consisted of 10 items ranging from common and less important accomplishments to rare and more important ones. Typical items included: "Elected as one of the *officers* of a class (freshman, sophomore, etc.) in any year of college," "had drawings, photographs, or other art work published in a public newspaper or magazine," "received a prize or award for a scientific paper or project," "conducted music which was publically performed," "was editor of college paper, annual, magazine,

TABLE 6

PARTICIPATION AND ACHIEVEMENT OF JUNIOR COLLEGE STUDENTS

Percent Participating in Each Activity

	Total Sample	*Lowest col*	*Highest col*
Athletics–intercollegiate	14.1	0.0	26.5
Music	17.9	4.5	38.6
Writing	9.7	3.6	17.6
Student government	13.7	4.9	41.5
Science clubs and projects	7.9	0.9	28.3
Debate	3.0	0.0	17.9
Acting	7.5	0.9	28.3
Departmental clubs related to my major field	27.7	0.0	57.4
Athletics–intramural	32.5	4.1	69.8

Non-Academic Achievement

Area of Achievement	*Mean*	*Standard deviation*
Leadership	.86	1.67
Social participation	.83	1.36
Art	.65	1.35
Social service	.78	1.27
Science	.20	.62
Business	.69	.95
Humanities	1.09	1.34
Music	.24	.80
Writing	.42	.95
Social science	.35	.67
Speech & drama	.35	.93
Recognition for academic accomplishment	.26	.62

anthology, etc.," "had one or more leads or minor roles in plays *not* produced by my university." A simple scale of recognition for academic attainment was also used.

The means on the nonacademic achievement scales indicate that achievement of any kind is rare (less than one achievement is typical in every area but humanities), and that nonacademic achievement in science, music, social science and speech and drama is especially rare. The higher average score on humanities achievement is probably due to items which include "read one or more 'classic' literary works on my own (not a course assignment)" and "built a personal library around a core collection of poetry, novels, biographies, etc."

These results suggest that many two-year college students are active participants in some extracurricular activity, but that achievement in the form of some public recognition or accomplishment is rare. Since participation in one area is unrelated to participation in another, it is likely that a fairly high proportion of two-year college students are involved in *some* extracurricular activity. The range of participation across colleges also suggests that some colleges are able to draw many of their students into extracurricular activity while others are not. In short, two-year college students *are* often involved in the extracurricular life of their campus.

Future plans. The career plans of students may be the most important outcomes of college education, with consequences for both students and their colleges. College administrators may plan better if they know the proportions of graduates who plan to transfer, to find employment, to enter the armed services, or to marry. In addition, they should know the steps students have already taken toward these goals. The extent and realism of these steps can suggest ways in which educational and vocational counseling might be changed. This study, therefore, included several items which bear on the plans of two-year college students who are at the end of their college training.

As shown in Table 7, the plans of students after college reflect the high rate of transfer orientation we noted in the section on purposes. Nearly two-thirds of all students definitely planned to transfer to a four-year college and another 8.9% planned to transfer if their grades allowed it. The responses to another question indicate that 73.3% of students said they planned to transfer when they entered college and still plan to transfer. Only 8.1% said they had never planned to transfer. However, as also shown in Table 7, only about a third of the students who say they plan to transfer have been accepted by a college, while another third had not yet sent for applications.

While it is difficult to estimate from these data the number of students who will actually transfer, many students who planned to transfer almost certainly will not be able to. (Approximately a quarter of the students have grades of less than C.) This suggests that many students have not begun to think realistically about some of the alternatives they will very probably have to face. Perhaps two-year colleges could perform a needed service by helping these students consider other alternatives before, not after, they leave college.

Students who plan to work present a similar picture. Nearly a quarter of these students say they have been training for a specific job which had been

TABLE 7

PERCENTAGE OF STUDENTS CHOOSING EACH ALTERNATIVE OF FUTURE PLANS ITEMS

If you planned to transfer to a four-year institution when you first entered your college, has your experience in college affected your plans?	
Have not changed my plans, still plan to transfer	73.3
I am beginning to think of other alternatives	8.0
I have decided to seek employment instead	2.9
I have developed other plans (getting married, entering service, etc.)	6.0
I have never planned to transfer	8.1
Data missing	1.7
What are your plans when you complete your training at your present college?	
Will continue with present employment	2.3
Definitely plan to obtain a job	12.6
Definitely plan to transfer to a four-year institution	66.2
Probably will transfer, if my grades allow it	8.9
Plan to be married (will not work)	.7
Plan to enter Armed Services	4.1
Other	3.9
If you plan to obtain a full-time job next year, what kind of job have you been preparing for?	
A specific job for a particular firm in the area (job has been promised to me)	24.7
A specific job for a particular firm (I have not made an application yet)	16.2
A specific kind of job—but not for a particular firm (e.g., jobs such as draftsman, TV repairman, etc.)	29.7
I have been obtaining general training to help me find a job	29.4
If you plan to obtain a full-time job next year, what steps have you taken?	
I have not yet begun to look for work	35.4
I have filled out applications for employment, but have not yet received a reply	31.9
I have been hired by a company	32.7
If you plan to transfer to a four-year institution, what steps have you taken?	
I have not yet sent for applications	34.6
Have applied for admission but have not received reply	33.0
Have been accepted by a four-year college	32.4

promised them in their local area, another 16.2% were training for a specific job for which they had not made application, and nearly 30% were obtaining general training for employment. While nearly a third have already been hired by a company, another third had not yet begun to look for work. Thus, there are many vocationally-oriented students who also might be encouraged to think about their futures.

General college satisfaction. How well do two-year college students think their institution has prepared them for work or transfer? Several items in the questionnaire referred to this question. As shown in Table 8, most students who planned to obtain a full time job the following year felt that their college had prepared them for the work they would do either "fairly well" or "very well". However, 10.5% felt their preparation was either somewhat poor or very poor. They gave a similar rating to the help their college training would be in obtaining a job.

Similarly, most students who planned to transfer to a four-year college felt their college had prepared them moderately well to very well for the academic problems they would face.

In addition, students were asked whether they thought their college experience had given them certain skills and understandings. On the sense of progress items shown in Table 8, only 50.7% felt their college had given them a detailed knowledge of their field, and only 46.8% felt their college had prepared them for employment—that is, taught them skills and techniques directly applicable to a job. However, 76.6% felt they had gained a broad understanding and appreciation of their field, 76.9% felt they had gained a general comprehension of contemporary thought, and 75.5% felt their college experience had made them more aware of the needs of the community.

Table 8 also shows the distribution of responses to satisfaction items dealing with four aspects of students' college experience scored on a three-point scale: dissatisfied, somewhat satisfied, and very satisfied. Students seemed to be fairly satisfied with the preparation for further education and the quality of teaching. They seemed to be less satisfied with the quality of the social life. (As we shall see, the majority of students spend little time on campus, so this result may be understandable.) Only about a third thought their college was a frequent or constant center of cultural activity in their community. Overall, however, students found their college experience enjoyable most of the time.

All these figures reflect a surprisingly high degree of satisfaction. Most two-year college students, whatever their plans, were quite satisfied with most

TABLE 8

RESPONSES TO SATISFACTION AND SENSE OF PROGRESS ITEMS

Satisfaction with preparation

If you plan to obtain a full-time job next year, how well do you think your college has prepared you for the work you will do?

Very poorly	4.9
Somewhat poorly	5.6
Fairly well	44.1
Very well	36.3
Extremely well	9.1

Do you feel that the training you received at your college has helped or will help you obtain a full-time job for next year?

Definitely not a help	3.3
Little help	9.2
Somewhat helpful	29.3
Very much help	28.1
Definitely helpful	30.1

If you plan to transfer to a four-year college, how well do you think your college has prepared you for the academic problems you will face?

Very poorly	0.9
Moderately poorly	3.5
Moderately well	49.6
Very well	38.9
Extremely well	7.2

Sense of Progress

These items deal with your reactions to your college experience. We would like your best estimate and your overall impressions.

	% saying yes
Do you think your college has given you a detailed knowledge of your field?	50.7
Has your college prepared you for employment (that is, taught you skills and techniques directly applicable to a job)?	46.8
During your college career, do you feel you have gained a broad understanding and appreciation of your field?	76.6
Do you feel you have gained a general comprehension of contemporary thought–the philosophies, controversies and ways of life that influence us today?	76.9
Has your college experience made you more aware of the needs of your community?	75.5

General Satisfaction

These items ask about your satisfaction with various aspects of your college experience.

	Dissatisfied	*Somewhat satisfied*	*Very satisfied*	*Missing data*
Preparation for employment	11.4	59.0	25.9	3.7
Preparation for further education	3.6	44.4	49.0	3.1
Quality of teaching	4.4	49.6	43.1	3.0
Quality of social life	22.6	51.2	22.9	3.2

Is your junior college a center of cultural activities in your community such as concerts, exhibits, or lectures?	
Never a center of activity	5.0
Rarely a center of activity	13.8
Occasionally a center of activity	34.3
Frequently a center of activity	29.6
Constantly a center of activity	7.8
Data missing	9.5

Overall, have you found your college experience enjoyable?	
Little of the time	2.6
Some of the time	16.4
Most of the time	65.8
All of the time	12.4
Data missing	2.7

aspects of their college careers.[2] Thus, if we accept the testimony of the students, themselves, two-year colleges are doing a good job of meeting their needs. It must be remembered, of course, that our results are based on students who stayed in college for the full two years. It is possible that dropouts would be less satisfied.

Finances and working. Probably the most crucial problem faced by two-year college students is the financing of their education. One of the most important reasons many students attend two-year colleges is that they cannot afford to go to four-year colleges, and many students must work to attend an inexpensive two-year college. It is important, therefore, to know how students finance their education. Students were asked to rate the importance of each of 10 sources of finance on a three-point scale: a major source, a minor source, or not a source. Students also indicated whether they had worked during college, the average number of hours they had worked, and the type of work they had done most often while attending college (secretarial, gas station attendant, sales, etc.). Table 9 shows the responses to these questionnaire items dealing with finances and working. The responses to the item dealing with sources of educational funds indicate that the major sources of educational funds for most students were parental or family support, their own savings, and work while attending school. Only a few students rated scholarships of any kind as a major source. Thus, most students are supported by their families, but a sizable group are supported, at least partially, by their own employment. Indeed, the next item indicates that only 17% of the sample did *not* work while attending two-year college. Furthermore, nearly three out of ten students have worked 20 or more hours a week. Students worked in many varied jobs–the most common being sales (8.4%), general clerical (7.3%) and odd jobs (6.8%). Other investigators (Medsker & Trent, 1965; Richards, Rand, & Rand, 1966; Cross, 1968) have reported that between half and two-thirds of two-year college students were working while attending college.

TABLE 9

THE FINANCIAL AND WORKING STATUS OF JUNIOR COLLEGE STUDENTS

For each source of educational funds listed below, indicate how important it has been in financing your college work.

	Major Source	*Minor Source*	*Not a Source*	*Missing Data*
Loans from the National Defense Education Act Loan Fund	5.4	3.2	71.4	20.0
Loans from school loan funds	.6	1.8	75.5	22.2
Loans from banks or other organizations	2.8	4.2	71.2	21.8
Loans from family or friends	5.0	11.0	60.9	23.1
Parents, family or sponsors	49.7	23.0	16.5	10.7
A trust fund	1.4	2.1	73.2	23.3
My own savings	29.9	36.5	18.9	14.7
Working while attending school	29.7	32.0	23.5	14.8
Scholarships or grants from school attended	4.1	7.6	67.7	20.6
Scholarships or grants from other sources	6.0	6.9	66.7	20.5

Have you worked part- or full-time while attending college?	
Did not work	17.0
Sometimes worked part-time	34.0
Always worked part-time	27.4
Have had both full- and part-time jobs	13.2
Sometimes worked full-time	3.4
Always worked full-time	3.7

On the average, how many hours per week have you worked?	
Have not worked on a regular basis; just once in a while	26.5
Less than 10 hour per week	10.7
10–14	14.2
15–19	14.4
20–24	12.3
25 or more	17.4

What type of part- or full-time work have you done most often while attending college?	
Babysitting	3.9
General clerical (receptionist, file clerk, library assistant, etc.)	7.3
Typist (able to type at least 40 words per minute with few errors)	2.4
Secretarial (able to take and transcribe dictation)	1.2
Gas station attendant	3.3
Dance band musician	.8
Waiter (waitress)	3.3
Dishwasher	1.4
Odd jobs (yardwork, storm window installation, etc.)	6.8
Sales (door to door, dept. store, campus representative, etc.)	8.4
Tutor or teacher	1.6
Technical work (lab. technician, draftsman, etc.)	4.7
Protective work (policeman, guard, fireman, etc.)	.7
My usual job cannot be classified above	32.9

Commuting and allocation of time. Students were asked the number of miles and the amount of time they traveled to attend college. They also described the type of transportation they usually used. Students indicated where they did most of their studying for classes, and the proportion of their leisure time spent on campus. The responses to these items are shown in Table 10.

TABLE 10

THE COMMUTING AND ALLOCATION OF TIME OF JUNIOR COLLEGE STUDENTS

What provisions have you made for transportation while you are in college?	
Live on or near campus, so I don't need a car	21.6
Live on or near campus, but keep a car for my personal use	17.8
Commute to campus by public transportation or ride; do not have a car at home	6.3
Commute to campus by public transportation or ride; have a car at home	7.5
Drive to campus in my own car	45.7

How far do you travel to attend classes?	
0–1 mile	33.6
2–5 miles	23.7
6–10 miles	15.2
11–20 miles	13.4
21 or more miles	13.3
Missing data	.7

How must time do you spend traveling to and from college?	
I live on campus	19.9
1–10 minutes a day	17.8
11–30 minutes	34.5
31–60 minutes	18.7
One to two hours	7.0
More than two hours	1.7
Missing data	.6

Where do you do most of your studying for classes?	
At home	60.2
In a city or county library	.5
In a study room or the college library	17.3
In my dormitory, fraternity or sorority room	17.5
Other	3.8
Missing data	.7

Not including the time you are in class or studying, what proportion of your leisure time do you spend on campus?	
Little of my leisure time (¼ or less)	63.5
Some of my leisure time (¼ to ½)	16.4
Much of my leisure time (½ to ¾)	9.9
Most of my leisure time (¾ or more)	9.8
Missing data	.4

These figures reveal that 21.6% of students live on or close enough to campus to eliminate a car. Only about 14% commute to campus by public transportation, while 45.7% drive to campus in their own cars. These figures suggest that most students in two-year colleges are commuters. Indeed, over a quarter of the students traveled more than 10 miles to attend classes, and over a quarter spent more than a half hour traveling to and from college each day. Perhaps this commuting accounts for the fact that 63.5% of the students spend little of their leisure time on campus, and less than 10% spend most of their time there. Furthermore, few students (17.3%) do most of their studying for classes in the college library or study room, while 60.2% study at home.

The effects of working and commuting. Working and commuting students are often a matter of great concern in two-year colleges. Administrators and counselors feel that these students do not participate in the life of the college as much as other students. They suspect that students who must travel long distances to attend college, or students who work during their college years, do not have the same college experiences as other students and may not achieve as much.

This study attempted to examine the effects of working and commuting on the participation, achievement, satisfactions, and experiences of two-year college students.

We examined the *effects* of working by correlating the extent of working and the average number of hours per week worked with the other information in the questionnaire. The extent of working and the number of hours worked were almost completely unrelated to students' plans, academic and nonacademic achievement, participation in campus activities, teaching styles, and satisfaction items. In fact, in correlations with 60 other variables, only three variables were related to working with correlations as high as .10. The amount of leisure time spent on campus was correlated −.13 and −.21 with the extent and number of hours worked. The other two variables that are related to working are the number of steps taken to obtain a job after junior college (.17 with the extent of working and .12 with the number of hours) and Business Achievement (.36 and .32 respectively). This last correlation may reflect some of the items in the business achievement scale referring to success in private business—which, of course, are easier if one is working in private business. Apparently, working students in two-year colleges have college careers which are very similar to those of other students.

What are the effects of the extensive commuting of two-year college students? To answer this question we correlated the *distance* students traveled to campus, and the *time* students needed to travel to college with the other information described in the methods section. These correlations showed that the commuting student has essentially the same academic and nonacademic achievements as other students. His college grades and scores on most of the nonacademic achievement scales are not very different from those of other students. The exception to this is in leadership achievement, where there are correlations of −.17 with commuting distance and −.20 with commuting time.

There are negative relations between participation in extracurricular activities and commuting, but the participation of commuting students was only slightly less in any area. The largest differences occurred in student government (−.12 and −.16 with distance and time, respectively), departmental clubs (−.14 and −.14), and intramural athletics (−.17 and −.18). The proportion of students' leisure time spent on campus was moderately negatively related to commuting (–.34 and –.45).

One would have expected this slightly lower rate of participation to be reflected in the satisfaction items, but this is not the case. There appeared to be no relation between commuting distance or time and the sense of progress items, satisfaction with the college experience items (including satisfaction with the quality of social life), or with the teacher rating items. Furthermore, commuting students appeared to have found their college experience just as enjoyable and felt just as strongly that their college had been a help, whether they planned to work or transfer to a four-year college. Commuting students also reacted to the faculty in much the same way as other students. Commuting students, then, tended to participate slightly less in extracurricular activities (although they had nonacademic accomplishments just as frequently as other students in every area but leadership) but were not different from other students in terms of their grades, satisfactions, reactions to teachers, or plans.

DISCUSSION

This report has shown that some of the problems of two-year colleges which we described in the introduction are serious, while others are not. First, the very diversity of student needs presents a challenge to the two-year college. It must provide advanced vocational and technological training for students who desire technical education; it must offer the first two years of a four-year education for transfer students; and it must be a center of learning which provides general education for the many students who want to increase their knowledge but do not want to transfer. These are demanding roles. But the results described in this report suggest that most students think their colleges are performing these diverse roles very well. Their responses to the satisfaction and sense of progress items suggest that they believe their colleges have given them good technical training, education for transfer, and general education. Most important, transfer students felt they were ready for four-year college work; students who planned to obtain jobs felt they had been well trained; and those whose goal was general education believed they had gained general knowledge.

The same diverse student needs place many demands on instructors. Students' descriptions of the teaching practices in two-year colleges suggest that instructors emphasize factual information and exact answers. Perhaps, relative to their four-year college peers, these instructors do not place as much emphasis on broad understanding and controversies in the field. This may account for the clarity of instruction. Although there is some diversity in teaching practices from college to college, the most important point is that most students described their instructors as very capable in most ways. Furthermore, the practices which students report as common and uncommon suggest that the teaching practices in two-year colleges are generally good.

Another problem of two-year colleges, the high incidence of commuting and working students, was not as serious as has been thought. Our analyses indicated that commuting and working were generally unrelated to students' satisfaction, sense of progress, perceptions of teaching, plans, nonacademic achievement, or academic performance. Of course, working and commuting students did not participate as much as other students in some areas–but even this difference was small. Apparently, commuting and working do not have many effects in the lives of two-year college students. Perhaps working and commuting students make adaptations which allow them to participate in the life of their college. Perhaps students with special talents find ways to exercise their talents in spite of minor obstacles. And perhaps students do the things they want to do by simply finding time to do them. In any case, it is clear that commuting and working had only small effects on the college careers of the students in this sample.

One problem does appear to be important–the high proportion of students who claim they want to transfer to four-year college. About two-thirds of the students in our sample said they definitely planned to transfer to a four-year college. It is possible that most of these students were accurately reporting their aspirations, since they could have chosen another alternative, "plan to transfer if my grades allow." However, only about a third of the students planning to transfer had been accepted by a college (the survey was administered in April and May of 1967). It is difficult to estimate from these data the proportion of students who will actually continue. (Other estimates have varied between 30 and 50%.) About 89% wanted at least a bachelor's degree, but many of these students may have unrealistic aspirations. Only a minority plan to work and few have begun to look for work. Clearly, many of the other students will have to find jobs. Perhaps two-year colleges could encourage students who are unlikely to be able to transfer to think more realistically about their futures. Such programs as "Career Days" or special meetings with local employers might be useful. In any case, it is clear that very few students have been "cooled out"–lowered their aspirations–during their two-year college career.

In summary, this report on two-year colleges has shown that some differences are sizable while others, such as the differences between working and commuting students and other students, are not. We have tried to show that two-year colleges face many common problems, but often choose different solutions. A good way to describe two-year colleges in the United States may be as a complex pattern of similarities and differences. This complex pattern reflects the challenging task of two-year colleges: to educate and elevate their students, thereby educating and elevating the greater society.

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[1] *A comparison of graduates who did and did not complete the questionnaire showed that completers had slightly higher ACT scores and high school grades. Otherwise, these two groups were similar when they entered college.*

[2] *The results of a correlational analysis not reported here show that satisfaction was unrelated to the grades students received and to the students' nonacademic achievements.*

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WHO GOES WHERE TO JUNIOR COLLEGE?

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SUMMARY

For 102 two-year colleges, correlations were computed between student body characteristics and a factorially derived description of institutional environments. Student characteristics covary in interesting ways with the characteristics of the college environment; the pattern of variation is meaningful; and for the most part the pattern is consistent with the interpretation given the environmental measures in earlier studies. These conclusions are true only in a broad sense, however, for most of the correlations are moderate to low. Therefore, the environmental factor scores are not, and are not intended to be, a completely satisfactory substitute for a detailed description of the student body.

Two-year colleges probably constitute the fastest growing segment of American higher education. Since 1961, nearly 200 two-year colleges have been established, and enrollment in two-year colleges has almost doubled (American Association of Junior Colleges, 1967). It has been estimated that by 1970 there will be 1000 two-year colleges enrolling nearly 2 million students. Moreover, a two-year college will be the first college attended by an increasing proportion of entering college freshmen.

The growing importance to American society of two-year colleges emphasizes the need for comprehensive information about these institutions. Although a sizeable body of literature has become available to meet this need (Clark, 1960; Gleazer, 1963; Medsker, 1960; Fields, 1962; Knoell & Medsker, 1964; Blocker, Plummer, & Richardson, 1965; Seibel, 1965; Richards, Rand, & Rand, 1965, 1966; Cooley, 1966; Hoyt & Munday, 1966; Collins, 1967; Alkin & Hendrix, 1967; Hendrix, 1967; Pace, 1967), many areas of comparative ignorance remain. The purpose of this study is to reduce this ignorance, thereby facilitating intelligent planning for two-year colleges. The specific area of concern is the allocation of students to and among two-year colleges. Although it is commonly assumed that two-year colleges differ greatly in the kinds of students they enroll, very little information is actually available concerning what kind of student attends what kind of college. It should be recognized, of course, that many factors, including legal restrictions, affect student attendance at one two-year college rather than another so that the present study is descriptive, not prescriptive.

Our basic technique was to compute correlations between an "objective" description of two-year college environments and a comprehensive set of information about the entering classes of a sample of two-year colleges. The study, therefore, resembles Astin's (1965) earlier study of four-year colleges.

PROCEDURE

DESCRIPTION OF COLLEGE ENVIRONMENTS

In previous research on two-year college environments (Richards *et al.*, 1966), 36 different characteristics of two-year colleges were identified. By means of factor analysis, the complex relationships among these 36 college characteristics were reduced to a limited number of categories that can be interpreted in terms of their underlying nature. Six such categories, or factors, were obtained and given names which seemed to reflect their general meaning: Cultural Affluence, Technological Specialization, Size, Age, Transfer Emphasis, and Business Orientation.

In a second study (Richards *et al.*, 1965), multiple correlation techniques were used to estimate scores on these factors for 581 accredited two-year colleges. Inspection of the high-scoring and low-scoring colleges on each factor suggested that it might be desirable to modify the interpretation of three of the six factors. Specifically, Private Control appears to be a more appropriate title than Cultural Affluence, Age might well be renamed Conventionalism, and High Cost would be more appropriate than Business Orientation.

The estimated factor scores for the colleges were converted to stanines (Guilford, 1956, p. 503),[1] which are normalized standard scores with a mean of 5 and a standard deviation of 1.96. These estimated factor scores organize the information currently available about two-year colleges into a brief profile. This brief profile can be used to characterize individual colleges or groups of colleges. In the present study, the factor scores for a sample of colleges were correlated with the characteristics of the same colleges' student bodies.

MEASURES OF STUDENT CHARACTERISTICS

The data concerning the characteristics of entering students were obtained from the battery administered by the American College Testing Program in high schools to students applying to colleges using the ACT assessment. This battery provides a comprehensive set of information about each student: test scores, high school grades, special interests, campus needs, and non-classroom accomplishments. As part of its Class Profile Service (American College Testing Program, 1966), ACT provides summary statistics to colleges about the characteristics of its entering class on this comprehensive set of information. Information is provided both for "enrolled" students and for "non-enrolled" students; that is, those students who had ACT scores sent to that college but did not enroll. These summary statistics provide the basic data for this study. The specific pieces of information included are discussed below.

ACT Composite. The ACT test yields the following subtest scores: English, mathematics, social studies, and natural science. Each score is converted to a common scale with a mean of approximately 20 and a standard deviation of about 5 for college-bound high school seniors. The four subtest scores are averaged to yield a Composite score. The ACT test is a typical test of academic potential, with reliabilities and validities against grade criteria of the magnitude to be expected for such tests (American College Testing Program, 1965). Two scores were used for each college: the mean and the standard deviation on the ACT composite for its students.

High School Grades. As a regular part of the ACT procedure, persons taking the ACT battery are asked to report their most recent high school grades in each of four areas: English, mathematics, social studies, and natural science. Research by Davidsen (1963) indicates that such self-reported grades correspond closely to high school transcripts. A reanalysis of Davidsen's data yielded a correlation of .92 between student-reported and school-reported grades. A grade point average (GPA) is computed for each student by assigning scores to grades so that A = 4, B = 3, *etc.* The score for colleges is the mean high school GPA of its students.

Non-Academic Achievement Scales. A checklist of extracurricular accomplishment in high school yields scores in the following areas: leadership, music, drama and speech, art, writing, and science. Each scale consists of eight items ranging from common and less important accomplishments to rarer and more important accomplishments. For example, science items include such accomplishments as "performed an independent scientific experiment" or "won a prize or award of any kind for scientific work or study." In general, the accomplishments involve public action or recognition so that, in principle, the accomplishments could be verified. The score on each scale for a student is simply the number of accomplishments he marks "yes, applies to me." Students with high scores on one or more of these simple scales presumably have attained a high level of accomplishment which requires complex skills, long time persistence, or originality. The score for colleges in each area was the percent of its students with one or more accomplishments in that area.

Influences on Choice of College. Each student rated 27 kinds of influence according to how much each one had affected his choice of a college. Each item was rated on a three point scale ("of no importance," "a minor consideration," "a major consideration"). In an earlier study (Richards & Holland, 1966), factor analysis was used to reduce the complex interrelations among these items to a small number of categories. Four major areas of influence were found–intellectual emphasis, practicality, advice of others, and social emphasis.

In the present study, scores for each of these areas of influence were derived for each college by taking three influences with high loadings in that area and low loadings in the other areas, determining the percentage of students at that college citing each of the three as a major influence, and adding the percentages.

Educational Aspiration. Students report their educational aspiration by choosing one alternative from possibilities ranging from "less than a B.A." to "Ph. D." (or its equivalent). For the present study, student choices were grouped into three categories–"less than a B.A.," "B.A.," "More than a B.A." A college's scores are simply the percent of students in each category.

Goals in Attending College. Students choose one of ten possibilities as their most important goal in attending. Because three goals account for the majority of student choices, the present study is restricted to these three. They are (1) to develop my mind and intellectual abilities, (2) to secure vocational or professional training, and (3) to earn a higher income. Scores for colleges are the percent of their students choosing each of these purposes as their primary goal in attending college.

Intended Major. Each student chooses his intended major from a list of possible majors that are grouped into nine broad areas: Social Science, Administration, Business, Agriculture, Medical, Arts and Humanities, Other, and Undecided.

Extracurricular Participation. Each student reports whether or not he expects to participate in each of nine extracurricular activities–intercollegiate athletics, intramural athletics, music, writing, student government, science clubs, debate, acting, and departmental clubs. College scores are the percent of students indicating that they do expect to participate in each of these activities.

Background Information. Students are asked several questions about their background. Two of these questions were included in the present study. The first question elicited information about the student's home community. Responses were classified into three categories–farm, suburb, and central city. College scores are the percent of their students indicating a home community falling into each of these categories.

The second question inquired about the income of the student's family. Responses were classified into three categories: 0–$7499, $7500–14999, and

$15,000 and up. Students had the option of saying that they did not know this information or that they considered it confidential, and these two categories were also included in the analysis. College scores are the percent of students whose responses fall into each of these five categories.

SAMPLE OF COLLEGES

A sample of 102 two-year colleges was obtained by taking all colleges that (1) participated in the 1965 post-enrollment ACT Class Profile Service (American College Testing Program, 1966), and (2) were listed in the table of junior college factor scores. In order to know to what degree this sample of colleges represents two-year colleges in general, the means and standard deviations on the junior college factor scores were computed and are summarized in Table 1. The results indicate that the sample colleges are somewhat below average on Private Control and High Cost and somewhat above average on Technological Specialization, Size, Conventionalism, and Transfer Emphasis. The small size of these deviations from average suggests that our results are fairly representative of the national population of two-year colleges.

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR A SAMPLE OF 102 COLLEGES ON JUNIOR COLLEGE FACTOR SCORES

	Mean	*S. D.*
Private Control (Cultural Affluence)	**4.75**	**1.63**
Tech. Specialization	**5.15**	**1.42**
Size	**5.25**	**1.64**
Conventionalism (Age)	**5.18**	**2.11**
Transfer Emphasis	**5.50**	**1.65**
High Cost (Business Orientation)	**4.76**	**1.87**

RESULTS

We first computed the correlation between student characteristics and attendance at a two-year rather than a four-year college by combining the 102 two-year colleges with 179 four-year colleges participating in the ACT 1965 Class Profile Service. A score of *1* was given to each two-year college and a score of *0* to each four-year college so that the correlations are point biserials. The Pearson product-moment correlations between the junior college factor scores and the student characteristics for the 102 two-year colleges were computed next. Those correlations[2] are shown in Table 2.

We also computed correlations[3] between the junior college scores–applying to a two-year college and six factor scores–and the characteristics of "non-enrolled" students, or students who had their scores sent to the college as part of their application but did not enroll. The pattern of correlations is quite similar to that shown in Table 2. These results strongly imply that the characteristics of a college's student body are determined more by who applies than by the college's selection process.

TABLE 2

CORRELATION OF ATTENDING TWO-YEAR COLLEGE AND JUNIOR COLLEGE FACTOR SCORES WITH STUDENT BODY CHARACTERISTICS

		Factor Scores (N = 102)					
	Atdg. Two Year Coll. (N = 281)	*Pri. Con. (Cult. Aff.)*	*Tech. Spec.*	*Size*	*Conven. (Age)*	*Trans. Emph.*	*H. Cost (Bus. Or.)*
ACT Composite							
Mean	−34	−09	19	10	−05	05	24
S. D.	29	−16	−02	20	01	21	−25
High School GPA							
Mean	−62	30	−39	05	40	−16	−25
Non-Class Accomp.							
Science	−24	07	17	−31	03	−02	09
Art	00	−15	−03	10	−21	03	21
Writing	−52	14	−41	−30	17	−08	−12
Leadership	−52	30	−29	−36	31	−14	−23
Music	−39	20	−38	−14	25	−02	−28
Drama	−40	33	−37	−28	31	02	−31
Influ. on Choice of College							
Intell. Emph.	−47	25	−10	−14	13	00	28
Practicality	24	−59	18	14	−38	09	00
Advice of Others	16	−07	03	−23	−06	−18	−07
Social Emph.	−25	22	−15	−09	35	03	−17
Educ. Aspiration							
Less than B.A.	69	−11	−19	−05	18	−19	−34
B.A.	−29	−17	10	−07	−28	23	36
More than B.A.	−45	25	16	14	03	06	08
Primary Goal in Atdg. Coll.							
Develop Mind	−39	26	−21	22	08	06	37
Voc. Trng.	08	−04	13	20	03	−04	−17
Higher Inc.	49	−30	19	−07	−07	01	−21

TABLE 2

CORRELATION OF ATTENDING TWO-YEAR COLLEGE AND JUNIOR COLLEGE FACTOR SCORES WITH STUDENT BODY CHARACTERISTICS

		Factor Scores (N = 102)					
	Atdg. Two Year Coll. (N = 281)	*Pri. Cor. (Cult. Aff.)*	*Tech. Spec.*	*Size*	*Conven. (Age)*	*Trans. Emph.*	*H. Cost (Bus. Or.)*
Intnd. Major							
Soc. Sci.	−30	22	−44	−31	04	05	−02
Admin.	10	06	29	08	−11	02	31
Business	47	01	−23	01	02	−14	04
Science	−34	−12	21	−14	−10	10	06
Agric.	24	−14	48	05	01	−05	−18
Medical	−15	03	−08	34	07	02	01
Arts & Humanities	−32	−24	15	44	−09	00	04
Other	44	−14	11	36	−06	−08	03
Undecided	28	−08	09	−15	07	08	−21
Extra-Curr. Plans							
Inter-Coll. Ath.	29	19	10	−22	−14	−05	23
Intra-Mural Ath.	00	19	19	−20	−07	−14	36
Music	−28	33	−54	−35	20	−09	−11
Writing	−28	16	−36	−26	05	02	04
Stu. Govern.	−46	45	−33	−40	17	−14	13
Science Clubs	−17	12	07	−21	12	−02	−01
Debate	−16	17	−22	−30	−04	−04	−04
Acting	−24	27	−44	−35	09	−08	−06
Dept. Clubs	−61	19	−25	−09	21	−03	04
Background							
Home Community							
Farm	14	18	−22	−29	33	−08	−49
Suburb	−06	−25	26	12	−31	06	59
Central City	−10	09	−03	27	−03	02	−10
Income							
0–7499	08	07	−23	−28	24	05	−33
7500–14999	02	−29	43	23	−39	03	48
15000 and up	−12	09	24	36	−08	07	15
Confidential	14	01	15	04	−14	−10	21
Don't Know	−11	22	−44	−08	24	−09	−26

Note.—*Where* $N = 281$, $r_{05} = .12$ *and* $r_{01} = .15$; *where* $N = 102$, $r_{05} = .20$ *and* $r_{01} = .25$. *All decimal points have been omitted in table.*

DISCUSSION

The results shown in Table 2 pertain to two questions: (1) Who goes to a two-year rather than a four-year college and (2) What kind of student goes to various types of two-year colleges? The results pertinent to the first of these questions show that students at two-year colleges tend to be less able academically than their peers in four-year colleges, both on the ACT test and on high school GPA. However, at two-year colleges students vary more in academic talent than do students at four-year colleges. These findings support earlier results (Seibel, 1965; Cooley, 1966; Hoyt & Munday, 1966). Students at two-year colleges also had fewer non-academic accomplishments (except in art) than did four-year college students. In short, two-year colleges tend to have less talented students than four-year colleges have, regardless of how talent is defined.

Students entering a junior college are influenced more by practical considerations and less by intellectual or social emphasis in choosing their college. Similarly, they are more concerned with the instrumental value of college for a higher income and less concerned with personal intellectual development. As we would expect, they tend to aspire to less than a B.A. degree and to reject graduate training as a goal. Similarly, they intend to major in business, agriculture, or fields not included in a list more suitable for students at four-year colleges,[4] and they are less interested in the humanities, science, or the social sciences. Except for intercollegiate athletics, they have less expectation of participating in extracurricular activities. The exception may result, in part, from the growing tendency of four-year colleges to request academically marginal athletes to go to a two-year college for a year or two and then transfer to the four-year school.

To summarize this pattern, two-year colleges attract pragmatic students seeking vocational training; they are less attractive to talented students who are intellectually and academically oriented, who plan a degree in one of the traditional subject areas, and who expect to take part in a wide variety of activities in college. From this pattern one might guess that the student attending a two-year college is likely to be the first in his family to attend college and that for him college is primarily an instrument of social mobility.

We do not, however, intend a disparaging judgment of two-year colleges. Two-year colleges typically have different goals than four-year colleges, and these goals emphasize opportunity for all, technical preparation, and a diversity of subject matter. The characteristics of students attending two-year colleges are quite consistent with these goals. In other words, two-year colleges appear to be performing their intended function in American higher education rather well.

When only junior colleges are considered, a number of other findings emerge. The student attending a high scoring college on the Private Control Factor earned relatively high grades in high school and achieved in a number of non-academic areas. In choosing a college, he was more influenced by intellectual or social considerations and less by practical matters than other junior college students. He aspires to advanced training, hopes to develop his mind, and is less interested in higher income as a goal in attending college. He expects to participate in a number of extra-curricular activities. He is less likely to come from a suburb, or from a middle income background.

A similar pattern was found for the Conventionalism factor. Students at high scoring colleges on this factor also had high grades, had non-classroom accomplishments in a number of areas, and emphasized social considerations but deemphasized practical matters in choosing a college. Compared to students at colleges high on Private Control, however, they were more likely to come from a farm or low income background.

Some similarities to this pattern were also found for the High Cost factor. On this factor, however, students at high scoring colleges may be "underachievers," for they have higher ACT scores but lower grades. They also have fewer non-classroom accomplishments. Students at High Cost colleges emphasized intellectual considerations in choosing a college, aspired to more than a junior college degree, and hoped for intellectual development during college. Unlike students at schools high on Private Control or Conventionalism, however, they are more likely to be from a suburban, middle income background.

The overall description of students attending colleges high on one or more of these three factors has many similarities to the description of students attending four-year colleges. Colleges scoring high on these factors, therefore, may resemble four-year colleges more than do other two-year institutions.

The student attending colleges high on Technological Specialization is likely to have low grades and few non-classroom accomplishments. He puts less emphasis on intellectual development and has fewer expectations of extracurricular participation. He is more likely to plan to study administration, science, or agriculture and less likely to study social science or business. He is more likely to come from a suburb and less likely to come from a low income family. In short, he is pragmatically oriented and has little interest in academic or cultural activities.

Large colleges have student bodies with more variability in academic potential and fewer non-classroom accomplishments than do other two-year colleges. Students are frequently concerned with intellectual development or vocational training, and they are less likely to have been influenced by advice in choosing their college. Students frequently plan to study medical fields, arts and humanities, or a field not included in the list of majors—no doubt, partly because such majors are provided more often at large schools. They are less likely to plan participation in extracurricular activities. This may be a realistic expectation related to the number of "behavioral settings" (Barker & Gump, 1964) available to individual students at big colleges. Finally, students are more likely to come from urban, relatively high income families.

The results for the Transfer Emphasis factor are somewhat disappointing because one might expect many significant correlations between this factor and some student characteristics. However, only two correlations greater than .20 were obtained, indicating that students at colleges with high scores on Transfer Emphasis vary more in academic potential and are more likely to aspire specifically to the B.A. degree than do students elsewhere. In the factor analysis, Transfer Emphasis was a well-defined factor, but it involved transfer by *graduates* of high scoring colleges rather than by entering students at the colleges. It may be, therefore, that the college experience is more important than student characteristics in determining transfer rates.

The overall results, then, indicate that student characteristics covary in interesting ways with the characteristics of the college environment; the pattern of variation is meaningful; and for the most part the pattern is consistent with the interpretation given the environmental measures in earlier studies. These conclusions are true only in a very broad sense, however, for the absolute magnitude of most of the correlations is moderate to low. Therefore, the environmental factor scores are not, and were not intended to be, a satisfactory substitute for a detailed description of the student body.

[1] *A Xerox copy of the table showing the stanine score for each college on each factor is reprinted in the Appendix.*

[2] *These correlations were computed at the University of Utah Computer Center.*

[3] *A table showing these correlations is presented in the Appendix.*

[4] *The list has been modified recently to include more fields suitable for students at two-year institutions.*

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APPENDIX

TABLE A

CORRELATION OF JUNIOR COLLEGE CHARACTERISTICS WITH STUDENT BODY CHARACTERISTICS FOR "NON-ENROLLED" STUDENTS

		Factor Scores (N = 102)					
	Atdg. Two Year Coll. (N = 281)	*Pri. Con. (Cult. Aff.)*	*Tech. Spec.*	*Size*	*Conven. (Age)*	*Trans. Emph.*	*H. Cost (Bus. Or.)*
ACT Composite							
Mean	−22	−08	16	02	−11	07	09
S. D.	12	−07	12	20	−07	07	11
High School GPA							
Mean	−54	−19	−31	−03	24	−01	−34
Non-Class Accomp.							
Science	−19	09	17	−28	05	−07	09
Art	08	14	−09	09	−16	−04	33
Writing	−41	27	−44	−30	14	03	−20
Leadership	−48	33	−20	−32	26	−08	−25
Music	−26	23	−31	−11	13	−01	−20
Drama	−27	36	−42	−27	29	−02	−37
Influ. on Choice of College							
Intell. Emph.	−45	09	−08	−16	−04	00	13
Practicality	35	−47	22	08	−47	06	22
Advice of Others	02	−02	−08	−26	−04	−23	09
Social Emph.	−20	21	−01	−04	25	04	−14
Educ. Aspiration							
Less than B.A.	60	00	−28	−15	26	−12	−34
B.A.	−37	−08	17	−01	−26	14	33
More than B.A.	−39	05	19	21	−12	03	24
Primary Goal in Atdg. Coll.							
Develop Mind	−32	10	−11	−09	−10	08	27
Voc. Trng.	05	02	04	11	−02	−11	−06
Higher Inc.	39	−19	20	−04	13	11	−24
Intnd. Major							
Soc. Sci.	−34	14	−42	−25	−03	00	04
Admin.	09	−07	29	03	−22	08	40
Business	44	−01	−17	05	06	−09	03
Science	−34	−25	21	−06	−23	01	12
Agric.	20	00	45	01	03	−02	−12
Medical	−09	−02	01	23	03	−03	−10
Arts & Humanities	−18	03	−07	27	00	03	03
Other	49	−07	16	11	03	00	−06
Undecided	20	−12	00	−10	24	03	−35

(continued)

Note.–*Where N = 281, r_{05} = .12 and r_{01} = .15; where N = 102, r_{05} = [illegible] and r_{01} = .25. All decimal places have been omitted in table.*

TABLE A

CORRELATION OF JUNIOR COLLEGE CHARACTERISTICS WITH STUDENT BODY CHARACTERISTICS FOR "NON-ENROLLED" STUDENTS

Factor Scores (N = 102)

	Atdg. Two Year Coll. (N = 281)	*Pri. Con. (Cult. Aff.)*	*Tech. Spec.*	*Size*	*Conven. (Age)*	*Trans. Emph.*	*H. Cost (Bus. Or.)*
Extra-Curr. Plans							
Inter-Coll. Ath.	18	05	29	−12	−23	00	33
Intra-Mural Ath.	02	08	33	−13	−14	−07	45
Music	−25	25	−51	−31	13	14	−13
Writing	−22	13	−29	−16	−13	00	08
Stu. Govern.	−41	26	−32	−26	02	−11	16
Science Clubs	−16	16	14	−25	−04	−09	13
Debate	−11	09	−13	−29	−21	03	13
Acting	−17	22	−44	−25	08	−13	−03
Dept. Clubs	−49	26	−27	−01	25	−09	06
Background							
Home Community							
Farm	14	21	−19	−27	33	−07	−56
Suburb	−03	−25	20	07	−30	10	62
Central City	−22	05	−01	28	−07	01	−01
Income							
0–7499	00	04	−13	−23	09	01	−26
7500–14999	−02	−24	40	26	−29	10	50
15000 and up	−01	07	21	30	−08	13	27
Confidential	18	14	06	−07	−05	−13	17
Don't Know	−03	17	−45	−18	29	−14	−45

WHO SELECTS VOCATIONAL-TECHNICAL POST-HIGH SCHOOL EDUCATION?

Robert H. Fenske

SUMMARY

We compared high school seniors planning vocational-technical education with those planning college and with those having no post-high school plans for further education. Aptitude and social background information, generally found to differentiate the college bound from the non-college bound, were analyzed. These characteristics were not linearly related to vocational-technical plans, but did seem to interact in various ways to predict vocational-technical plans. The interaction is examined in some detail and the implications for research and practice are traced.

Since the middle 1950's a constantly increasing proportion of high school graduates have been planning further education. Much research has provided useful information about students engaged in college programs leading to a baccalaureate or professional degree. Primarily because of our concern for their rapidly decreasing prospects in the world of work, there is also a growing body of research on those who terminate their education with a high school diploma. By comparison, there is a dearth of information about graduates aspiring to technical and vocational curricula.

The relatively low status of "vo-tech" programs among youth graduating from high school has been obscured by the dramatic increases in aspiration for college degrees. Counselors frequently express their concern that "at the present time *only one student in ten leaving the education system without a Bachelor's Degree has some specific occupational training*" (Venn, 1964). The continuing high drop-out rate in college degree programs accentuates the need for better matching of students and educational programs–a process which evidently should include an increased flow of students into post-high school occupational education.

There is some evidence that many counselors are not aware that few youth enter vo-tech programs. For example, in a recent survey, high school counselors significantly over- estimated the proportion of their graduates who enroll in vocational programs. In addition, there was a startling difference between the actual percentage of students planning vocational education (19 per cent) and the 41 to 46 per cent who the counselors thought could definitely profit from such further education (Domian and Hooker, 1964).

This inaccuracy of the counselors' "guesstimates" may well stem from the persistent difficulty of identifying attributes and/or background characteristics that are strongly associated with a predilection for vo-tech post-high school education. In contrast, there is considerable predictive association between many readily identifiable variables and plans for entering baccalaureate programs. Berdie and Hood (1966) recently reported such findings for a sample of 44,856 Minnesota high school seniors. They selected two groups for correlation analysis: those who planned college attendance and those who planned immediate employment. For certain subgroups who planned college this analysis produced a multiple R of .71 for 17 predictor variables such as scholastic achievement and ability and father's occupation and educational level. The larger study from which their article was drawn (1965) showed that, in general, the girls and boys who indicated plans for entering nursing school or business and trade schools tended to have median scores approximating the over-all medians on nearly every variable–hardly a group of data from which to generate robust regression equations.

A state-wide survey similar in purpose and scope was conducted in Wisconsin and reported by Little (1958). His findings also showed a strong positive association between college plans and the social background variables of the Minnesota studies. Both studies also found strong negative association between the predictor variables and reported plans for no further education beyond high school. The Wisconsin high school seniors who reported plans for trade or business school (2,052 of the total study population of 30,782) were, in contrast to those planning college and those terminating their education at graduation, distributed quite uniformly across the independent measures. We might superficially conclude that these otherwise potent predictors of post-secondary school plans do not work with vo-tech students. A search of the research literature revealed no published study which identified any of the common background variables as highly predictive of vo-tech educational plans.

A more recent study conducted in the state of Washington generally supported the findings of previous studies regarding background characteristics of high school students planning post-high school vocational education (Bowles and Slocum, 1968). In addition, however, it examined school attitudes and experiences as reported by 3,117 junior and senior students in 12 high schools. Students planning vocational or business training rated between college bound students and those planning to terminate their formal education in high school on grade level, interest in school work and satisfaction with school. In general, these vo-tech students had found high school a relatively unsuccessful and uninteresting experience and had unrealistically low self-images of their scholastic and intellectual abilities.

THE STUDY

The study reported here examined the distribution and interrelationship of certain background characteristics and attributes of youth who planned post-high school vo-tech programs. These students were compared with their classmates who reported other vocational plans.

Data for the present study were provided in May, 1963 by graduating seniors in all public high schools of ten urban Wisconsin communities. The ten communities, none of which were within or adjacent to the metropolitan areas of Milwaukee or Madison contained all types of publicly supported programs of post-high school education available in Wisconsin and were randomly selected from several distinct geographic regions. Four had University of Wisconsin branch campuses which offer freshman and sophomore programs; two contained campuses of Wisconsin State Universities. In addition, three of the communities contained technical institutes operated by a local vocational school, and all of the communities offered some post-high school vocational programs in a publicly supported school. The plans of the seniors for the year immediately following graduation were reported on specially designed questionnaires. The seniors also provided socio-economic status (SES) data; information about the educational level of their parents and the father's occupational status. For each senior, the schools provided both the class rank and the raw scores and percentile rank on a state-wide scholastic aptitude test. The aptitude and background characteristics (hereafter termed "independent variables") about which data for these seniors were gathered had been well established by previous research as generally related to post-high school plans (see, for example, Beezer and Hjelm, 1961).

It seems reasonable to conclude that the sampling procedures produced data which could directly be generalized to include all 28 urban (but not metropolitan or rural) communities in Wisconsin.[1] Extension of the findings beyond this should be conditioned by differences in types of educational opportunities. Probably the most important difference was that the sample communities did not contain comprehensive "community" or "junior" colleges, though vo-tech education was generally available through institutes and special high school programs.

THE FINDINGS

For the purpose of this study, the reported plans of the seniors for the following year were regarded as the dependent variable. We grouped the plans into the following ordinal categories: (a) full-time enrollment in an educational program leading to a four-year college degree or a professional degree, such as law or medicine; (b) full-time enrollment in vocational or technical programs which prepare students for specific occupations and which do not lead to a college degree;[2] and (c) no further education on a full-time basis. The percentage of the total sample contributed by each group was 39.5, 15.5, and 44.5, respectively.

All of the aptitude and background independent variables used were at the ordinal level of measurement. Gamma was used to measure the association that each independent variable had with the post-high school plans of students (Goodman and Kruskal, 1954). The values of gamma were found to be as follows: (a) rank in graduating class–.594; (b) score on state-wide scholastic ability test–.575; (c) attainment of educational grade level of father–.496; (d) attainment of educational grade level of mother–.478; and (e) status of father's occupation–.431. The standard test for gamma revealed all of these values as statistically significant beyond the .05 level (Goodman and Kruskal, 1963). The scholastic ability test used was the Henmon-Nelson Test (1942). The type of father's occupation was scaled according to the index commonly used by the U. S. Bureau of the Census (1960).

Interesting aspects of the bivariate distribution often are not revealed by summary statistics. Such is the case here, for comparatively little of the relationship between independent and dependent variables was contributed by vo-tech plans. This is made explicit by Table 1, which shows the percentages of the three post-high school plans within scholastic rank in graduating class (by deciles from lowest to highest).

In another analysis the pattern shown in Table 1 was substantially the same for all of the independent variables; in each case, the vo-tech group was distributed quite uniformly across the range of the measures, in contrast with the negatively skewed distributions for the college degree group and the positively skewed distributions for the seniors planning no further education. Chi-square tests showed that the vo-tech distribution differed significantly at the .05 level from both the other distributions on all of the independent variables.

TABLE 1

PERCENTAGE OF POST-HIGH SCHOOL PLANS WITHIN DECILES OF SCHOLASTIC RANK IN GRADUATING CLASS

	Rank by Deciles (1st designates lowest decile)										
Plan	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*	*9th*	*10th*	*N*
College	2.2	15.4	14.5	20.3	28.9	39.8	45.0	55.2	68.4	82.5	1563
Vo-Tech	13.8	17.9	20.8	21.0	18.6	16.6	17.6	12.4	11.4	6.8	611
No School	84.0	66.7	64.7	58.7	52.5	43.6	37.4	32.4	20.2	10.7	1778
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	3952

Customarily in describing data of this sort, we construct "profiles" outlining important typicalities of each group of students; this procedure was most useful in the present study both for the seniors who reported college plans and those who reported no educational plans. The former generally had a rank in the highest 30 per cent in both scholastic ability and achievement, at least one parent with some college education, and a father with a "white collar" occupation. The latter was accurately typified by a sharply contrasting profile; rank in the lowest 30 per cent on at least one scholastic measure (usually achievement), at least one parent with no higher than an eighth-grade level of educational attainment, and a father with a "blue collar" occupation.

However, the profile of the "typical" vo-tech senior remained indistinct; rank on scholastic measures was nearly as likely to be in the highest 30 per cent as in the lowest 30 per cent. There was no strong identity with a particular level of parental educational attainment or with the status of the father's occupation. The vo-tech senior remained amorphous when measured by the variables so useful in describing other types of seniors. The analyses reported below attempted to bring the picture into focus.

At the time data were gathered for this study, three of the ten communities contained a technical institute operated by the local publicly-supported vocational and adult school. These institutes offered integrated and comprehensive full-time post-high school programs in such fields as electrical technology, mechanical design technology, business administration, accounting, and secretarial science. A major entrance requirement was high school graduation; and for residents of a community which supported such a school, their was no tuition. The additional opportunity offered by the local availability of these institutes resulted in only a slightly larger percentage of vo-tech plans: 19.0 per cent of the seniors in the three communities with technical institutes reported such plans compared with 14.1 per cent in the other seven communities.

The distribution of independent variables for vo-tech seniors was compared between communities which contained technical institutes and those which did not. Of the seniors specifying attendance at local technical institutes, well over half (55.7%) were drawn from the lowest 30 per cent of rank in scholastic achievement. In comparison, only about one-fourth (23.4%) of the vo-tech seniors in seven other communities who chose to enroll in institutions away from their home communities ranked in the lowest 30 per cent in scholastic achievement. A tentative interpretation of this finding is that local institutes, like junior colleges, provide an opportunity for those whose scholastic achievements do not recommend that further education be initiated while incurring the expense of living away from home. Data for the SES variables showed no important differences between the comparison groups.

The interrelationships among the independent variables were investigated in several subsequent analyses. In preference to summary statistics, the large number of cases allowed the more advantageous technique of contingency tables partialled to control for several variables simultaneously (Blalock, 1960). Stated another way, this technique enables the reader to cross classify the original pair of variables within each category of a control variable. Because of the need for sufficient numbers of cases for this type of analysis, we used only one of the scholastic measures. Rank in class was selected over scholastic ability since its strength of association with plans was somewhat greater, and there were fewer cases of missing data.

Table 2 shows that the combination of SES factors and rank in class produced noteworthy differences in the "yield" of vo-tech plans within both the highest and the lowest 30 per cent categories of rank in graduating class. The group of seniors who ranked in the highest 30 per cent scholastically were definitely "college-prone" (71.1 per cent reported such plans). Within this group, various combinations of parental factors produced percentages of college plans ranging from 86.7 for those whose parents had both high educational and occupational status to 49.1 per cent for those whose parents had low status in both characteristics. For this high-achieving group, however, there was a negative relationship between vo-tech plans and these parental factors. Of those whose parents had both high educational and occupational status less than 10 per cent reported vo-tech plans, while for those whose parents had low status in both characteristics, over one-fourth (26.7 per cent) reported vo-tech plans. In other words, among high ability students those from low SES backgrounds were more apt to chose vo-tech education. These data suggest that the polarity between a high level of scholastic achievement and college attendance, on one hand, and a set of parental SES factors associated with *no* further education, on the other, produce a remarkably high tendency for an intermediate plan–vo-tech education.

A converse pattern is shown in Table 2 for low ability students (those at the lowest 30 per cent in scholastic achievement). On the whole, this group predominantly planned for no further education. However, over one-third (41.8 per cent) of those low ability students from high SES backgrounds, those whose parents had both the high educational and occupational status usually associated with college plans, chose the "compromise" vo-tech plans.

Table 2 also shows that, within the group of seniors who ranked in the middle 40 per cent of their graduating class, the percentages of vo-tech plans were quite similar among the SES combinations of differing parental education and occupation. Unlike those who ranked in either the highest or the lowest 30 per cent in scholastic achievement, seniors with a mediocre scholastic record selected vo-tech plans independent of parental background factors. This finding tends to substantiate the idea that vo-tech plans have a special attraction for youth who have sharply contrasting sets of parental factors versus scholastic factors. Since the middle scholastic group did not have the scholastic factor pulling them strongly toward either college plans or no further education, the set of parental factors alone did not produce marked inconsistency of vo-tech plans.

TABLE 2

PERCENTAGES OF POST-HIGH SCHOOL EDUCATIONAL PLANS FOR SENIORS WITH DIFFERING COMBINATIONS OF SCHOLASTIC ACHIEVEMENT AND PARENTAL BACKGROUND FACTORS (N = 3952; Rows = 100 per cent)

Parent's Attributes	Plan			
	College	*Vo-Tech*	*No Plans*	*N*
	Highest 30 Per Cent in Graduating Class			
H.S. Diploma or More,[a] High Status Occupation	86.7	9.3	4.0	532
H.S. Diploma or More, Low Status Occupation	75.1	10.4	14.5	391
Less Than H.S. Diploma,[b] High Status Occupation	63.8	13.9	22.3	187
Less Than H.S. Diploma, Low Status Occupation	49.1	26.7	24.2	380
	Middle 40 Per Cent in Graduating Class			
H.S. Diploma or More, High Status Occupation	63.3	19.9	16.8	462
H.S. Diploma or More, Low Status Occupation	49.0	15.8	35.2	467
Less Than H.S. Diploma, High Status Occupation	42.7	17.5	39.8	198
Less Than H.S. Diploma, Low Status Occupation	29.8	16.2	54.0	430
	Lowest 30 Per Cent in Graduating Class			
H.S. Diploma or More, High Status Occupation	32.5	41.8	25.7	283
H.S. Diploma or More, Low Status Occupation	19.6	18.2	62.2	274
Less Than H.S. Diploma, High Status Occupation	18.1	17.9	64.0	86
Less Than H.S. Diploma, Low Status Occupation	8.8	10.0	81.2	262

[a] *Either or both parents have at least a high school diploma.*

[b] *Neither parent is a high school graduate.*

A similar analysis of these data was also performed using percentile rank on a state-wide scholastic ability test in the place of rank in class. The pattern of results was generally the same as noted on the previous page.

We desired to examine the level of achievement and its relation to post-secondary school plans. Utilizing comparison of the percentile rank on the scholastic ability test with the percentile rank in class, we identified under-, level-, and over-achievers. Seniors were grouped by deciles according to scholastic test rank. This distribution was then sorted into three groups: (1) those who ranked at least three deciles lower on scholastic achievement were denoted as "under-achievers", (2) those who ranked on the test within two deciles either way of their class rank were denoted as "level-achievers" and (3) those who ranked at least three deciles higher on the test than in class rank were denoted as "over-achievers". Obviously, substantial numbers of seniors at the extremes on scholastic achievement were excluded from these somewhat arbitrary groupings. Each of these three groups were then categorized by post-high school plans as shown in Table 3. As expected, over- and under-achievers were associated with college and no-plans, respectively. However, we desired to focus on the student with vo-tech plans.

The reader will recall that 15.5 per cent of all seniors in this study reported vo-tech plans. The relatively high percentage of such plans for "under-achievers" (26.2 per cent), shown in Table 3, seems to link the circumstance of lower than expected achievement with a high propensity for vo-tech education. One interpretation of this relationship is that it may indicate the dissatisfaction of under-achieving students with the nature of the high school curriculum and their decision to pursue a different kind of program at the post-high school level–a program that might be more relevant to their perceived needs.

TABLE 3

PERCENTAGE OF POST-HIGH SCHOOL PLANS OF SENIORS GROUPED BY RELATION BETWEEN SCHOLASTIC ACHIEVEMENT AND ABILITY (Rows - 100%)

	Plan			
	College	*Vo-tech*	*No Plans*	*N*
Under-Achievers	15.4	26.2	58.4	901
Level-Achievers	48.2	15.0	36.8	1261
Over-Achievers	55.0	12.5	32.5	1280

SUMMARY AND CONCLUSIONS

Each of the aptitude and SES background factors used as independent variables in this study (scholastic ability and achievement, father's occupation and education, and mother's education) was significantly associated with the ordinal categories of post-high school plans (college, vo-tech, no further education). However, in each case, little of the strength of association was contributed by vo-tech plans: percentages of such plans were quite evenly distributed across the range of each independent variable.

Significantly more of the seniors in the lowest 30 per cent in scholastic ability or achievement indicated vo-tech plans in communities with technical institutes than in communities without such institutions. Evidently, the local presence of such a facility is most influential upon the plans of those whose scholastic record does not clearly recommend further education. The percentage of seniors reporting vo-tech plans was slightly higher in the three sample communities which contained technical institutes than in the seven which did not.

Analysis uncovered two types of graduating seniors with a singularly high propensity for vo-tech plans: (1) seniors who ranked in the highest 30 per cent of their graduating class (a level of achievement strongly associated with college plans) but whose parents had low occupational and educational status (a circumstance predominantly associated with plans for no education beyond high school), and (2) seniors with a converse pattern–those in the lowest 30 per cent scholastically but whose parents had both high educational and occupational status. It would be feasible to put this empirical finding to the test of prediction for vo-tech educational plans since the measures used are commonly available as part of high school student records. The identification of these two types of youth who are predisposed toward vo-tech education should have considerable practical significance for high school counselors and curriculum planners. Further research might determine the extent to which the high percentage of vo-tech plans are attributable to counseling processes or to a reluctant personal compromise between discordant sets of scholastic and parental factors. Future studies might also closely attend to the interrelationship among these and other variables as they relate to the differences between boys and girls in post-high-school plans. Much is known about the reluctance of parents in certain socio-economic groups to send daughters to college, but very little is known about this situation in relation to vo-tech education.

We found "under-achievers" had a markedly stronger tendency toward vo-tech plans than seniors who achieved at or above their rank in scholastic ability. Perhaps the circumstance of lower than expected achievement is largely a concommitant of dissatisfaction with the academic programs of the high school–particularly with those aspects that seem only to prepare for more schooling of essentially the same type. The prospect of a college degree program of at least the same length as the one being completed would be anathema to such seniors. In contrast, the prospect of a program much shorter in length and, above all, clearly directed to a visible and attainable occupational goal may be a highly desirable one. If generally true, such a prospect has significance for student recruitment. Implications for curriculum-building follow directly: the current trend toward increasing the general education component of vo-tech programs could be diminishing the attractiveness of these programs to the group most productive of prospective students.

On the basis of this study, it seems reasonable to postulate that such commonly used background variables as aptitude, achievement, and SES factors have some utility in predicting vo-tech plans. Our findings indicate that these variables *taken singly* are of limited usefulness, but that *in combination* they begin to yield usable information. Accordingly, we suggest further investigation begin with these combinations (e.g., under-achievers; those high on aptitude measures but low on SES factors associated with educational aspiration; etc.) in explorations of the flow of youngsters to post-secondary education and careers.

[1] *From all ten communities combined, 3,952 of the 4,166 qualified seniors (94.9 per cent) participated in the study. The lowest proportion participating for any school was 93.9 per cent, and the highest was 98.1 per cent. The questionnaires were administered either in regularly scheduled classes or in group counseling sessions. Representativeness of the sample was determined by comparing responses between boys and girls on six items which were not expected to differ on the basis of sex; e.g., . . . parents' educational attainments. Chi-square tests revealed no significant differences at the .01 level. A similar test was applied to the differences in scholastic ability and achievement between the 178 qualified seniors who did not participate and those who did participate in the study. The differences were not statistically significant.*

Data from the 1960 U. S. Census on pertinent community characteristics were compared between the ten sample communities and the other 18 urban Wisconsin communities which were separate from the metropolitan areas of Milwaukee and Madison. The community characteristics included population, size, educational attainment of adults, types of occupation, and distribution of family income. The median test at the .01 level of confidence revealed no significant differences except for population size. Larger communities were slightly over-represented in the sample group: their median population was 32,497; for all 28 communities it was 30,973.

[2] *Local private or entrepreneurial vocational-technical programs did not have great impact upon the post-high school plans of the graduates in this study. Of the seniors who reported vo-tech plans, only 18.7 per cent named schools identifiable as private or entrepreneurial. The data for such seniors were not separated from the rest for the analyses described in this report.*

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PART III:

PREDICTING STUDENT ACADEMIC SUCCESS IN TWO-YEAR COLLEGES

INTRODUCTION

The academic characteristics of college students are of obvious interest to deans and department heads who plan instructional programs, to registrars and admissions officers concerned with both attrition and salvaging transfer-in and transfer-out students, and to presidents attempting to define a role for their college or system of colleges within a state or regional framework of higher education. Open-door two-year colleges confronted by large freshman classes with diverse educational achievement require predictive information to assist in placement. It is appropriate, therefore, that any discussion of the two-year college include academic grades and assessment. Accordingly, these student characteristics and predictions are reported in *Academic Description and Prediction in Junior Colleges.*

Essentially we focused on five questions: (a) How do the academic potentials (test scores and high school grades) of freshmen attending two-year colleges compare with those attending four-year colleges? (b) How much diversity in academic potential is there among two-year colleges compared with four-year colleges? (c) What are the grading practices in two-year colleges? (d) Are ACT data (test scores and high school grades) useful predictors of two-year college grades? (e) And finally, in what ways do the two-year colleges where ACT data predict well differ from two-year colleges where they predict less well?

To examine these questions we reviewed the 1964 Research Service files of 85 two-year colleges (24,549 student records) and 205 four-year colleges (101,634 student records). Next we recorded the six two-year college institutional factor scores previously discussed: Cultural Affluence (re-named Private Control), Technological Specialization, Size, Age (re-named Conventionalism), Transfer Emphasis, and Business Orientation (re-named High Cost). The factor scores were the institutional characteristics we used to differentially describe the high versus low predictable colleges.

Two-year college students were found to be less able academically than their peers at four-year colleges. While test scores and high school grades both suggest this, they also show considerable overlap of the students at the two types of colleges. Many two-year college students have higher aptitude than the average four-year college student; conversely, many four-year college students have lower aptitude than the average two-year college student.

The study of diversity in aptitude revealed that, on test scores, students within the average two-year colleges were more diverse than those within the typical four-year colleges. In other words, the "spread" in achievement was wider at the two-year college. However, from two-year college to two-year college the students were somewhat more alike than were the students from four-year college to four-year college. We might therefore conclude that the two-year colleges are more diverse *within* their institutions and the four-year colleges are more diverse *among* their institutions.

Students at two-year colleges were awarded about the same college grades (about the same numbers of As, Bs, Cs, etc.) as students at four-year colleges, in spite of the fact that those attending the two-year colleges had less academic potential. Hence, if the two-year college students had attended four-year colleges, they probably would have obtained lower college grades.

Two-year college specific course grades in English, mathematics, social studies, and natural sciences were usefully predicted by ACT data. A similar result was found with two-year college end-of-first-year grade point averages. ACT data were about equally predictive at both two-year and four-year colleges for specific courses and overall grades. Approximately the same dimensions and level of talent appear to be necessary for academic success at both two-year and four-year colleges.

Two-year colleges where grades were the most predictable differed from institutions where they were less predictable in the Age and Business Orientation factors. On at least superficial examination it would seem that high-predictable colleges are more academic in their campus environments and that low-predictable colleges have more students majoring in business curricula. Why the latter should be true is puzzling.

The prediction of two-year college grades would be incomplete without the prediction of academic success in technical curricula. The final report, *A Comparison of Junior College Students in Transfer and Technical Curricula*, considers the matter.

A sample was studied of 3,913 first-year students at five two-year colleges located around the country. ACT test scores, high school grades, and end-of-year grades were available for the students. Students' records were classified by curricula. Some were defined as transfers and others as terminal-occupational. Means and correlation coefficients were reported separately for transfer and terminal students. These analyses confirmed the results of a number of other studies. Test scores and high school grades are about as predictive of grades in occupational as in transfer curricula. But contrary to expectation the two groups of students differed little with respect to their academic background, test scores and high school grades they brought with them to college.

These studies directly answer whether or not a special test is needed for grade prediction at two-year colleges. We concluded that standard predictors of college grades (test scores and high school grades) are useful predictors of academic success in two-year colleges. Using the same predictors, grades in two-year colleges are about as predictable as grades in four-year colleges, and grades in technical curricula are about as predictable as grades in academic curricula. On the basis of the results of these studies, there do not seem to be required aptitude dimensions peculiar to either the two-year or four-year college.

ACADEMIC DESCRIPTION AND PREDICTION IN JUNIOR COLLEGES[1]

Donald P. Hoyt
Leo Munday

SUMMARY

This investigation of the junior college examines the academic potential and college grades of junior college freshmen, reports the predictive validity of ACT data for junior colleges, and compares the results for 85 junior colleges with those for 205 four-year colleges. Junior college students were found to be somewhat less able academically than their peers in four-year colleges. Their average ACT scores differed by about one-half a standard deviation, while their high school grades were about one-third of a grade point apart. However, differences among junior colleges in academic potential were so great that the least able students in one junior college would be well above average in another. Similarly, the average academic potential at several junior colleges was well above the average in typical four-year institutions.

Students within individual junior colleges had more diverse academic talents than was typical of students in four-year institutions. College grades for junior college students were also more variable than those found in four-year colleges. However, grade point averages in both junior colleges and four-year colleges were quite similar (about a "C").

For the junior colleges in this study, ACT data possessed a very satisfactory degree of predictive validity. The median correlation with overall freshman grades was .64. In specific courses in English, mathematics, social studies, and natural science, median correlations were .62, .57, .61, and .61, respectively. Junior colleges for which high correlations were obtained differed in two dimensions–"Conventionalism" and "High Cost"–from those for which the correlations were relatively low.

Implications of these findings for pre-college guidance, academic programming, and educational planning were discussed.

The junior college represents one of the most important solutions to America's need for post-high school educational opportunities. Long a factor in American higher education, the junior college has only recently assumed its key role. Some of the forces producing this new importance are reviewed in the synthesis by Blocker, Plummer, and Richardson (1965).

The heavy responsibilities that junior colleges carry require that they have a thorough understanding of their students, goals, methods, and outcomes. Because they have only recently emerged as a major element in higher education, a limited amount of research data has been accumulated to foster these understandings. This report, which seeks to provide some additional information gathered through the Research Services of the American College Testing Program, explores the following questions:

1. How do the academic potentials of junior college freshmen compare with those of freshmen attending four-year colleges?

2. How much diversity in academic potential is there among junior colleges compared with four-year colleges?

3. What grading practices characterize junior colleges?

4. How useful are ACT data in predicting junior college grades?

5. Are junior colleges for which ACT data predict relatively well different from those for which they predict less well.

SAMPLE

The 85 junior colleges which participated in the 1964 ACT Research Service[2] comprised the junior college sample, while the comparison sample consisted of the 205 four-year colleges and universities participating in the same service.[3] Students from these colleges were all freshmen in 1963-64 and had all taken the ACT examination during the 1962-63 school year. A total of 24,549 students were included in the 85 junior colleges and 101,634 students in the 205 four-year colleges.

Table 1 describes the junior colleges according to their location and type of control.

TABLE 1

DESCRIPTION OF JUNIOR COLLEGES STUDIED

Geographic Region	*Number of Schools*
West Coast (Cal., Ore., Wash.)	4
South (Ala., Ark., Fla., Ky., Miss., Tenn.)	11
Midwest (Ill., Ia., Minn., Ohio, Wis.)	27
Rocky Mountain (Colo., Idaho, Kans., Mont., Nebr., N. Dak., S. Dak., Utah)	13
Southwest (Ariz., N. Mex., Okla., Tex.)	22
Northeast (Conn., Md., W. Va.)	8
(Total)	(85)

Institutional Control	*Number of Schools*
Public (State)	7
Public (District)	59
Private (Religious)	14
Private (Independent)	5
(Total)	(85)

MEASURES

Measures of both academic potential and college achievement were available for all students. These are described below.

Academic potential. Standard ACT data were used to measure academic potential. These included four scores on the ACT tests of educational development and four self-reported high school grades.

The ACT battery consists of tests in English, mathematics, social studies, and natural science. The tests are intended to measure general educational development, not specific subject matter mastery. Scores are adjusted to a common reference month (November of grade 12) so that there is no systematic advantage to taking the test early or late in the year.[4]

At the time the student writes the examination, he is asked to report his most recent high school grade in four subjects–English, mathematics, social studies, and natural science. To make these reports more comparable, grade 12 courses are not considered. These grades are reported with accuracy and have been found to be as predictive of college grades as high school rank (American College Testing Program, 1965a).

College achievement. Colleges participating in the Research Service are asked to report first-year grades to the ACT research division. Overall grade point average (GPA) is reported for nearly every student. In addition, colleges usually report GPA's for courses in English, mathematics, social science, and natural science. Occasionally, grades are reported in other more specific courses (e.g., religion, Latin, shop, etc.). Since not all students take the same courses, the number of cases fluctuates from one area to the next.

RESULTS

Question 1. How do the academic potentials of junior college freshmen compare with those of freshmen attending four-year colleges?

Table 2 gives means and standard deviations of ACT test scores and high school grades for the junior college and four-year college samples.

For the colleges in these samples, the four-year colleges attracted students whose academic potential averaged higher than that of junior college freshmen. Mean differences tended to be between one-third and one-half of a standard deviation. The extraordinarily large "t" values are a function of the large number of cases; with so many students in each sample, even trivial mean differences might be statistically significant.

Question 2. How much diversity is there among junior colleges compared with four-year colleges?

TABLE 2

ACADEMIC POTENTIALS OF JUNIOR COLLEGE AND FOUR-YEAR COLLEGE SAMPLES

	85 Junior Colleges[1]		205 Four-Year Colleges[2]		
	Mean	*S. D.*	*Mean*	*S. D.*	*"t"*[3]
ACT English	17.6	5.2	19.8	4.9	59.25
ACT Math	17.4	6.2	20.0	6.2	58.69
ACT Social Studies	18.2	5.9	20.7	5.7	59.52
ACT Natural Science	18.5	6.1	20.8	6.0	53.12
ACT Composite	18.0	4.9	20.5	4.8	71.43
H. S. English	2.39	.90	2.75	.86	56.25
H. S. Math	2.15	1.00	2.45	.98	42.25
H. S. Social Studies	2.49	.91	2.85	.88	56.25
H. S. Natural Science	2.25	.93	2.54	.92	43.94
H. S. Average of Four Grades	2.32	.73	2.65	.71	63.46

[1] *Total number of students = 24,549*
[2] *Total number of students = 101,634*
[3] *All differences significant beyond .01 level*

Table 2 shows that, as a whole, students enrolled in two-year and four-year colleges were about equally variable in their academic potentials. These results are difficult to interpret since they reflect variability which arises from two sources–differences among colleges of a given type and differences within individual colleges.

Simple analyses of variance were performed so that the total variability in each type of college could be assigned to one of these two sources. Computations were made only for the ACT tests, and results are shown in Table 3. The amount of variability due to differences *among* colleges of a given type is shown in the first two columns; the last two columns describe the typical variability *within* individual junior colleges and individual four-year colleges.

Table 3 suggests two generalizations. First, the ACT mean scores were somewhat more homogeneous among junior colleges than among four-year institutions. Second, the typical variability within two-year colleges was somewhat *greater* than the typical variability within four-year colleges; that is, the typical junior college contends with a somewhat greater range of academic talent than does the typical four-year institution.

Question 3. What grading practices characterize junior colleges?

TABLE 3

DIVERSITY OF ACT SCORES WITHIN AND AMONG JUNIOR COLLEGES AND FOUR-YEAR COLLEGES

	Standard Deviation Among Colleges		Standard Deviation Within Colleges	
Test Scores	*Jr. Coll.*	*4-Yr. Coll.*	*Jr. Coll.*	*4-Yr. Coll.*
ACT English	1.78	2.03	4.92	4.42
ACT Math	1.99	2.89	5.90	5.54
ACT Social Studies	1.97	2.40	5.61	5.22
ACT Natural Science	2.13	2.51	5.74	5.40
ACT Composite	1.91	2.33	4.53	4.17

We have previously pointed out that colleges participating in the ACT Research Services typically report overall GPA's and first-year grades in English, mathematics, social studies, and natural science. Since ACT routinely collects the most recent high school grade[5] in these same areas, it was possible to compare high school and college grades. The results for both junior colleges and four-year colleges are shown in Table 4. Differences between the two types of colleges were tested for statistical significance.

TABLE 4

HIGH SCHOOL AND COLLEGE GRADES AT TWO- AND FOUR-YEAR COLLEGES

	Junior Colleges[1]		Four-Year Colleges[2]		
	Mean	*(S. D.)*	*Mean*	*(S. D.)*	"t"[3]
H.S. English grade	2.39	(.90)	2.75	(.86)	52.17
Coll. English grade	1.98	(.98)	2.03	(.96)	6.62
H.S. Math grade	2.15	(1.00)	2.45	(.98)	26.32
Coll. Math grade	1.93	(1.12)	2.04	(1.15)	8.54
H.S. Soc. Studies grade	2.49	(.91)	2.85	(.88)	43.88
Coll. Soc. Studies grade	1.92	(.99)	2.00	(.91)	9.04
H.S. Nat. Sci. grade	2.25	(.93)	2.54	(.92)	30.90
Coll. Nat. Sci. grade	1.90	(1.06)	1.96	(1.05)	5.61
Average 4 H.S. grades	2.32	(.73)	2.65	(.71)	65.14
Coll. Overall grades	2.05	(.81)	2.11	(.79)	10.47

[1] *N varies from 9,204 (Mathematics) to 24,549 (Overall)*
[2] *N varies from 44,523 (Mathematics) to 101,634 (Overall)*
[3] *All differences significant beyond .01 level*

Table 4 indicates that junior college grades average about the same as four-year college grades. The slight differences, while generally less than 0.1 of a grade point, were, however, statistically significant, with the junior college averages being lower. These differences were much smaller than differences between high school grades for students enrolled in the two types of colleges. We probably can conclude, therefore, that had the junior college students in this sample attended a four-year institution, their first-year grades would have been lower.

Question 4. How useful are ACT data in predicting junior college grades?

To answer this question, multiple correlations were computed between scores on the four ACT tests and each criterion (college GPA) submitted by colleges in this study. Predictions made from the resulting multiple regression equations are referred to as the "T Index." Similarly, multiple correlations were computed between the four high school grades and each criterion; predictions made from the resulting regression equations are called the "H Index." Finally, the T and H Indices were averaged for each student; this average is called the "TH Index." The TH Index was then correlated with each criterion.[6]

Table 5 summarizes the predictive validity of ACT data for the criteria which colleges most typically use. Results are reported separately for junior colleges and four-year colleges.

TABLE 5

PREDICTIVE VALIDITY OF ACT DATA: MEDIAN CORRELATIONS AND STANDARD ERRORS OF ESTIMATE FOR JUNIOR COLLEGES AND FOUR-YEAR COLLEGES

		T Index		H Index		TH Index	
Criterion	*No. of Colleges*	*R*	*(SE)*	*R*	*(SE)*	*r*	*(SE)*
Coll. Eng. grades							
Jr. Colleges	82	.51	(.80)	.54	(.79)	.62	(.73)
4-Yr. Colleges	197	.54	(.72)	.51	(.75)	.61	(.68)
Coll. Math grades							
Jr. Colleges	48	.44	(1.01)	.48	(.99)	.57	(.94)
4-Yr. Colleges	119	.44	(1.00)	.44	(.99)	.53	(.94)
Coll. Soc. St. grades							
Jr. Colleges	72	.51	(.82)	.51	(.84)	.61	(.78)
4-Yr. Colleges	168	.51	(.82)	.49	(.82)	.59	(.76)
Coll. Nat. Sci. grades							
Jr. Colleges	60	.51	(.92)	.52	(.90)	.61	(.83)
4-Yr. Colleges	157	.49	(.88)	.51	(.87)	.59	(.81)
Coll. Overall GPA							
Jr. Colleges	85	.51	(.67)	.58	(.65)	.64	(.61)
4-Yr. Colleges	205	.55	(.62)	.58	(.60)	.65	(.56)

Table 5 shows that test scores and high school grades have highly acceptable predictive validity in both junior colleges and four-year institutions. While the correlations obtained for the two types of colleges are of a similar magnitude, the junior college standard error of estimate tends to be slightly larger because college grades are typically more variable in junior colleges than in four-year institutions. Since the TH-r is noticeably above both the T Index R and the H Index R, we can conclude that the two types of predictive data supplement each other usefully. For most criteria, the T and H Indices are of about equal validity. However, in predicting overall GPA, the H Index appears to have a slight advantage, particularly in the junior college sample.

In addition to the criteria reported in Table 5, a few junior colleges reported grades in other courses. Results for these specific courses are given in Table 6.

The median TH-r in these specific courses was .54, somewhat lower than that normally obtained in predicting grades in the areas of the ACT tests. We need additional research experience with such specific courses as these to determine the courses for which ACT data have useful validity.

TABLE 6

PREDICTIVE VALIDITY OF ACT DATA FOR SPECIFIC COURSES

Criterion	*TH-r*	*N*
Foreign Language	.53	137
Religion	.75, .51, .61	122, 174, 115
Speech	.65	117
Humanities	.34	169
History	.54, .65, .68	182, 127, 174
Government	.62	178
Economics	.44	307
Biology	.53	190
Chemistry	.64	108
Remedial Algebra	.50	106
College Algebra	.70	107
Accounting	.47, .37	299, 107
Shorthand	.39	311
Shop	.52	107

Question 5. Are junior colleges for which ACT data predict relatively well different from those for which they predict less well?

Richards, Rand, and Rand (1965b) recently reported that the major institutional characteristics of junior colleges could be described by six independent factors. They labeled the factors: Private Control, Technological Specialization, Size, Conventionalism, Transfer Emphasis, and High Cost.[7] Junior colleges for which grades were relatively predictable and unpredictable were compared on these six dimensions.

In 13 colleges the TH correlation was below .55. Scores for these 13 colleges on six factors were compared with the factor scores for the 20 colleges for which this correlation was above .70. Differences between means were tested by the conventional "t" test. Results are summarized in Table 7.

Mean scores on the "Conventionalism" and "High Cost" factors were significantly different for the two groups; the "accurate" group was higher on the Conventionalism factor and lower on the High Cost factor. Inspection of the score distribution emphasized the differences; only 2 of the 20 "accurate" colleges scored above 5 on the High Cost factor, while 9 of the 13 "low accurate" colleges scored above 5. On the Conventionalism factor, 18 of the 20 "accurate" colleges scored 5 or higher, while only 5 of the 13 "low accurate" colleges obtained scores of 5 or higher.

Richards et al., described a junior college high on the Conventionalism factor as a small, academically-oriented college with many traditions, a residential student body, and an administration that provided close supervision of its students. Colleges low on this factor would be characterized by large enrollments, few traditions, a student body which lived off campus and which was more vocationally than academically oriented, and an administration which did not exercise much supervision over students.

The High Cost factor was described by Richards et al., as follows. Junior colleges which are low on this factor would have relatively few students majoring in such business curricula as sales, retailing, and management; low tuition; and few faculty members with the Ph.D. degree. Junior colleges which are high on this factor would have more students in business fields, a high tuition, and a higher proportion of faculty members with the Ph.D. degree.

TABLE 7

COMPARISON OF JUNIOR COLLEGES FOR WHICH PREDICTIVE ACCURACY WAS RELATIVELY LOW AND RELATIVELY HIGH

	Pred. Accuracy High (N=20)		Pred. Accuracy Low (N=13)		
Factor	*Mean*	*S. D.*	*Mean*	*S. D.*	*"t"*
Private Control	4.85	1.5	4.31	2.1	.87
Tech. Spec.	4.85	1.5	5.46	1.3	–.30
Size	4.70	1.3	5.62	2.0	–1.57
Conventionalism	5.95	1.8	4.31	2.1	2.45*
Transfer Emphasis	5.25	0.9	5.38	1.5	–.32
High Cost	4.25	1.4	6.31	1.8	–3.73**

*$p < .05$

**$p < .01$

DISCUSSION AND IMPLICATIONS

The nature of the samples limits the interpretation of these findings. Lacking comparison with random samples from the national population, we must be cautious in generalizing these results to all colleges.

A further limitation concerns the criteria. Colleges participating in the ACT Research Service report overall GPA for every student, but they are free to report any specific course grades as additional criteria. While these specific grades are usually in freshman English, mathematics, social studies, and natural science, these groupings are too broad to ensure comparability. Thus, one college may report grades in remedial algebra as a criterion in the mathematics area, while another may report grades in calculus in the same area. It is necessary to assume that, as a group, junior colleges and four-year colleges reported grades from similar courses in each of the categories.

Academic potential. Findings concerning the academic potential of junior college students are not surprising. The "open door" admissions policy of most junior colleges could be expected to result in a lower average level of academic ability than that of four-year colleges. In overall academic potential, junior college students in this study averaged about one-half a standard deviation below four-year college freshmen; the average junior college freshman would rank at about the 30th percentile of the four-year college group.

No doubt these differences in the academic potential of students at the two types of colleges reflect some basic philosophical differences. Four-year colleges characteristically emphasize intellectual development as a major objective; junior colleges more often embrace a very broad range of objectives which may include intellectual development but which frequently focus on the development of vocational skills and competencies or other types of personal development. The findings of this study support the common contention that junior colleges should not try to imitate four-year colleges. The two kinds of colleges have different kinds of students, and institutional objectives appropriate for students of four-year colleges are not necessarily suitable for students of junior colleges.

Diversity. As important as the findings on the level of academic potential are those regarding diversity. Although mean ability scores for these 85 junior colleges were somewhat more homogeneous than for the 205 four-year colleges, there was substantial variation among them. The highest ACT-Composite mean obtained at any junior college was 23.3; the lowest was 8.3. Seven junior colleges averaged above 21, while five averaged below 15. When one considers that the standard deviation of the Composite score for college-bound students nationally is approximately 5, it is obvious that there was little overlap in the academic talents of students enrolled in junior colleges at the extremes of this distribution. It is also obvious that mean scores at some junior colleges exceed those at the typical four-year institution. Because of these differences, individual colleges will need to use extreme caution in generalizing from summary statistics to their local situation.

While diversity among junior colleges was considerable, diversity within these colleges was even more noteworthy. This study provided empirical support to the commonly held belief that junior colleges must contend with the entire range of academic talent—from the most gifted to the student of borderline intelligence. To provide academic programs which are appropriately stimulating to students of all academic levels is an immense challenge. Especially important are the needs to provide effective guidance to junior college students and to offer several levels of instruction in common subject matter areas such as English and mathematics.

An obvious implication of this diversity is that college-bound students should have more information about colleges, whether junior or four-year, to enable them to select appropriate institutions. It is through their high school counselors that this information can be dispensed and applied. Colleges differ in many ways other than academic potential[8] and information about some of these differences might usefully be supplied to guidance workers. In spite of the reluctance of institutions to provide objective descriptions of their students and environments, college-bound students frequently employ stereotypes of institutions in choosing a college. The high school counselor could act more constructively to improve the student's choice of a college by substituting facts for rumors about institutional differences.

Grading practices. This study lends support to the belief that grading standards at a given institution reflect only the relative abilities within that institution. For example, freshman grades in junior colleges and four-year colleges tend to be about the same despite the clearly established differences in academic potential. This finding confirms earlier reports (e.g., Knoell and Medsker, 1964; Hoyt, 1960) and suggests that normally a student will make higher grades in a junior college than in a four-year college. Of course, there are numerous exceptions to this generalization; differences among colleges are so great that there are many junior colleges in which grading standards are more strict than in the typical four-year college.

This situation, however, is no cause for concern. While the layman may still worry about whether a student is "really college material," the American society has profited immensely from its diverse system of higher education. Wide differences in grading practices *within* a given institution are generally considered undesirable; but, unless there are wide differences *among* colleges, higher education will be able to serve only a select few.

Colleges and universities considering junior year applicants should recognize that junior college and four-year college grades are not comparable, and that, when academic potential is held constant, junior college grades are higher than four-year college grades. Because of the diversity among junior colleges, however, generalization is hazardous, and college and university officials who evaluate junior college student records should have information about the grading practices of specific junior colleges. Thus, information about diversity in higher education would be useful to college and university admissions personnel, as well as to junior college educators and high school counselors.

Predictive validity. This review suggests that ACT data have highly acceptable validity for predicting academic success in junior colleges. This is especially reassuring in view of the needs of junior colleges to section students and to provide educational guidance. Such functions can be done well only when reasonably high correlations are found between predictors and criteria.

Grades were not equally predictable at all colleges. When extreme groups were compared, the junior colleges for which grades were highly predictable were characterized as high on the "Conventionalism" factor and low on the "High Cost" factor, while those colleges for which grades were least predictable obtained a reverse pattern on these two factors. Results on the "Conventionalism" factor suggest that predictable colleges tend to have high proportions of full-time students and faculty members; they have probably been established longer, also. If this interpretation is correct, it is not surprising that high scoring colleges were more predictable. These colleges would presumably include a higher proportion of students and faculty whose major commitment is to education; in short, these colleges have an academic orientation. Academic potential and academic achievement should correspond more closely in such colleges than in others where there is less of a traditional academic atmosphere.

The "High Cost" factor primarily reflects colleges with high tuition charges, a high proportion of faculty with Ph.D. degrees, and many students enrolled in business-oriented courses. It is not clear why scores on this factor should differentiate predictable from unpredictable colleges. Perhaps the academic motivations of students in "High Cost" colleges are unusually diverse; this might be the case if such colleges enrolled a number of students whose economic and vocational futures were assured by virtue of family ties. Further study should be made of the personal characteristics of students in these colleges to check this or other hypotheses.

These factor scores differentiated those colleges for which ACT data had high predictive validity from those for which the validity was marginal. Combining the two factor scores produced even more effective differentiation. Thus, 11 of the 13 "low predictable" colleges had a "Conventional" score below 5 *or* a "High Cost" score above 5; this same pattern occurred in only 4 of the 20 "high predictable" colleges.

This finding adds to the literature on predictability; prediction of junior college grades appears to be systematic. If prediction is systematic, then there is a possibility it can be manipulated, and educational purposes for which prediction is devised may eventually be more nearly realized by such manipulation.

[1] *The assistance of Larry Braskamp is gratefully acknowledged.*

[2] *The ACT Research Service is provided at no cost to colleges participating in the American College Testing Program. See the* General Information Bulletin *(American College Testing Program, 1965b).*

[3] *A few colleges were eliminated because they were known to have submitted biased samples, used the Research Service to investigate an atypical problem (e.g., to predict scores on other standardized tests), or provided fewer than 100 student records.*

[4] *For additional details, refer to the* ACT Technical Report *(American College Testing Program, 1965a).*

[5] *Senior grades are not used.*

[6] *The results resemble those obtained in a straightforward 8-variable multiple regression analysis. See the* ACT Technical Report *(American College Testing Program, 1965a). Naturally, the correlations will be subject to some shrinkage when applied to new samples. That this shrinkage is slight is suggested by a large scale study reported in the* ACT Technical Report *(American College Testing Program, 1965a).*

[7] *In an earlier study, Richards, Rand, and Rand (1965a) labeled the Private Control factor as Cultural Affluence, Conventionalism as Age, and High Cost as Business Orientation.*

[8] *See ACT Research Reports, No. 1, 3, 4, 5, and 9.*

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A COMPARISON OF JUNIOR COLLEGE STUDENTS IN TRANSFER AND TERMINAL CURRICULA[1]

Leo A. Munday

SUMMARY

Transfer and terminal junior college students appear to differ from each other on ACT Composite scores; transfer students make higher scores. For some junior college groups there were differences between transfer and terminal students with respect to high school grades (HSA) and college grades. It was unusual for transfer students in a college group to have both higher test scores and high school grades than terminal students. Though some differences were found between transfer and terminal students, the differences were small. Transfer and terminal students appear to be far more alike than different.

The prediction of college grades using tests was a little better for terminal than for transfer students. Using high school grades, on the other hand, prediction was slightly better for transfer than for terminal students and using both tests and high school grades prediction had about equal efficiency for both. At these junior colleges, useful predictive accuracy with ACT test scores and high school grades was possible for both transfer and terminal students.

Most junior colleges offer both transfer and terminal curricula. Sometimes students merely select to follow the one related to their vocational and educational goals; on other campuses students must meet certain requirements in terms of test scores and high school grades to be admitted to the transfer curriculum.

Educators frequently wonder in what ways the students in these curricula differ. The study of curricular differences may provide information about the adequacy of explicit or implicit curricular selection procedures and may highlight the groups of students with special educational problems. For example, if the terminal group has substantially lower academic potential, then should not opportunities for remedial classes in reading and arithmetic be provided as well as other special programs to meet the unusual educational needs of these students? On the other hand, if there is no difference between the groups in academic potential, it would make sense to relax the restrictions on students transferring from one to the other, and even to entertain the possibility of merging the two into one curriculum. And if college grading practices are not roughly consistent with the academic potential of students in these curricula, student morale problems may result.

Reasons such as these have prompted many junior colleges to study their transfer and terminal students as a part of their ongoing institutional research. Colleges that have made these comparisons may find it helpful to learn what other institutions have found. And other colleges interested in making such studies may find the experience of others instructive.

Data for this study were obtained from the records of ACT Research Services. In the past two years, five junior colleges divided their Research Service samples into transfer and terminal students. Comparisons in this study were made on four different dimensions: ACT test scores, high school grades, college grades, and the predictability of college grades. Of the five junior colleges, three were in California, one in Colorado, and one in Maryland.

All junior colleges included in this study had at least two samples of students, one terminal and one transfer. Two institutions requested separate analysis for male and female terminal and transfer students, and one sub-divided their terminal and transfer groups into "Business" and "Language Arts" groups. Thus a total of eight pairs of terminal and transfer samples was available. Altogether 3,913 students were included. Sample sizes ranged from 112 to 569. The "average" sample included 165 terminal students and 277 transfer students.

VARIABLES STUDIED

ACT test scores were included for study. These are tests of academic potential administered to college-bound students. There are four tests in English, mathematics, social studies, and natural sciences. The ACT Composite score is a simple average of the four area test scores, and as a Composite is the best single score estimate of all the ACT scores of academic potential. Scores are reported on a standard score scale from 1 to 36, with a mean of approximately 20 and a standard deviation of 5 for national college-bound students.

High school grades were also included for study. When a student takes the ACT Examination, he is asked to report his most recent high school grades, prior to his senior year in high school, in the four subject-matter areas of the test. These grades are converted to a four-point scale with A = 4.00, B = 3.00, etc. The average of these four self-reported grades (called HSA for "High School Average") is the best single grade estimate of all the high school grades of academic potential. The standard deviation of HSA for college-bound students nationally is about .70.

First year overall grade point averages (GPA) at college were also included. Grades were reported on a four-point scale with A = 4.00, B = 3.00, etc. The standard deviation of college overall GPA is about .80 for college students nationally.

Three predictive indices of college overall GPA's (the T-Index, the H-Index, and the TH-Index) were studied. The T-Index is the multiple correlation obtained by optimally weighting the four ACT test scores in predicting college grades. The H-Index is the multiple correlation obtained by optimally weighting the four high school grades in predicting college grades. The average of these two predictions for students is the TH-Index. The TH-Index generally provides the best prediction of college success from ACT data.

RESULTS AND DISCUSSION

The comparison of terminal and transfer students on ACT Composite scores is provided in Table 1. To determine if terminal and transfer students differed in academic potential t-tests were computed.

TABLE 1

TRANSFER AND TERMINAL STUDENTS COMPARED ON MEAN ACT COMPOSITE SCORES

	Transfer Students			Terminal Students			
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*t*
Junior College No. 1							
Men	432	18.9	4.93	221	16.8	4.67	5.3*
Women	325	18.3	4.33	221	15.7	4.10	7.1*
Junior College No. 2	569	18.9	4.82	221	15.0	4.06	11.3*
Junior College No. 3	156	15.8	5.00	130	15.0	5.30	1.3
Junior College No. 4							
Men	439	19.2	3.88	138	18.4	3.73	2.2*
Women	229	18.4	3.69	163	17.9	3.63	1.3
Junior College No. 5							
Business Majors	190	18.3	4.27	166	16.8	4.43	3.2*
Language Arts Majors	212	19.3	4.45	112	17.1	5.12	3.8*

**Significant at the .05 level.*

On the average, one would expect terminal students to have lower ACT Composite scores than would transfer students, presumably reflecting their lower academic potential as compared with transfer students. Table 1 confirms that for most junior colleges this is the case. Consistently, the ACT Composite mean is higher for transfer than for terminal students. The differences between the two groups, however, are not great. Table 1 reveals that the median difference in ACT Composite means between terminal and transfer students is 1.8 standard score points, or about one-third of a standard deviation in students' scores nationally. At junior college number three, however, the difference between terminal and transfer students on the ACT Composite was no greater than might occur by chance. Similarly, at junior college number four no real difference was found between women terminal and transfer students, although there was a difference between the men terminal and transfer students. In the other college where sex differences were examined (junior college number one), significant differences favoring transfer students were found for both men and women. In summary, we could say that at most junior colleges there appear to be slight but real differences in ACT Composite means between terminal and transfer students; transfer students have higher academic potential. Table 2 provides a comparison of terminal and transfer students on the average of the four high school grades (HSA). One would expect that terminal students would, on the average, have lower HSA's than transfer students, reflecting again their presumably lower academic potential. In only three of the eight comparisons was this expectation confirmed. Of the remaining five (nonsignificant) comparisons, three favored transfer students and two favored terminal students. On the whole, the absolute differences between the two groups of students are not great. The median difference in HSA means between terminal and transfer students is .10, or about one-seventh of a standard deviation in the distribution of ACT-tested college-bound students. At some institutions, however, there were sizable mean HSA differences between the two groups, suggesting considerable inter-institutional variability.

TABLE 2

TRANSFER AND TERMINAL STUDENTS COMPARED ON MEAN HIGH SCHOOL AVERAGES (HSA)

	Transfer Students			Terminal Students			
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*t*
Junior College No. 1							
Men	432	2.41	0.55	221	2.20	0.54	4.7*
Women	325	2.55	0.56	221	2.50	0.52	1.1
Junior College No. 2	569	2.39	0.60	221	2.02	0.56	8.0*
Junior College No. 3	156	2.27	0.66	130	2.16	0.72	1.3
Junior College No. 4							
Men	439	2.16	0.55	138	2.11	0.58	0.9
Women	229	2.28	0.59	163	2.37	0.62	−1.4
Junior College No. 5							
Business Majors	190	2.09	0.56	166	2.11	0.55	−0.3
Language Arts Majors	212	2.35	0.67	112	2.01	0.57	4.8*

**Significant at the .05 level*

In summary, the overall pattern was that there were only slight differences between transfer and terminal students in high school grades (HSA). This difference was not as great as on the ACT Composite, implying that colleges and students use test scores more than high school grades in these educational decisions. But because of sizable institutional differences, it is difficult to formulate a valid generalization about terminal-transfer differences in HSA.

Transfer and terminal students are compared on overall college grade point average in Table 3. One would expect transfer students to obtain higher grades than terminal students. In five of the eight comparisons, the mean differences were in the expected direction, but these differences were statistically significant in only three instances. By contrast, terminal students obtained significantly higher grades than transfer students at junior college number three. In general, the difference between college grades of transfer and terminal students was slight; the median difference was .17, or about one-fifth of a standard deviation of the students' college overall grades nationally.

TABLE 3

TRANSFER AND TERMINAL STUDENTS COMPARED ON MEAN COLLEGE GRADE POINT AVERAGES (GPA's)

	Transfer Students			Terminal Students			
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*t*
Junior College No. 1							
Men	432	1.89	0.69	221	1.84	0.69	0.9
Women	325	2.01	0.66	221	2.02	0.68	–0.2
Junior College No. 2	569	1.92	0.76	221	1.70	0.81	3.4*
Junior College No. 3	156	2.09	0.80	130	2.33	0.77	–2.6*
Junior College No. 4							
Men	439	1.72	0.65	138	1.83	0.71	–1.6
Women	229	2.22	0.68	163	1.96	0.69	3.7*
Junior College No. 5							
Business Majors	190	1.93	0.65	166	1.88	0.67	0.7
Language Arts Majors	212	2.27	0.80	112	1.94	0.78	3.6*

***Significant at the .05 level.*

The results thus far can be summarized as follows. Transfer and terminal junior college students in six of the eight groups studied differed on test scores, but only three of the eight differed in high school grades, suggesting that test scores may enter into this type of educational planning more often than do high school grades. And the fact that only slight differences were found in college grades for transfer and terminal students implies that generally different grading standards are applied to the two groups.

Next, transfer and terminal students were compared in the predictability of their junior college grades. Comparison is provided in Table 4. Results are given separately for the multiple correlation using tests (the T-Index), high school grades (the H-Index), and both tests and high school grades (the TH-Index).[2] For each group the difference in correlations (transfer minus terminal) is given. The theoretical expectation was that tests and high school grades would be more predictive of college grades for transfer than for terminal students. This was based on the notion that transfer students probably take more academic courses. The difference values in Table 4 have minus signs when this expectation was not met, i.e., when prediction was higher for terminal than for transfer students.

For six of the eight junior college groups, the tests (the T-Index) were more predictive of college grades for the terminal students than for the transfer students. The differences were not great, however; the median absolute difference was .077.

TABLE 4

THE PREDICTION OF COLLEGE GRADES FOR TRANSFER AND TERMINAL STUDENTS

T-Index (Prediction of College Grades Using 4 ACT Tests)

College Group	*Transfer*	*Terminal*	*Difference*
No. 1 Men	.325	.462	–.137
No. 1 Women	.361	.491	–.130
No. 2	.410	.259	.151
No. 3	.539	.441	.098
No. 4 Men	.289	.290	–.001
No. 4 Women	.436	.457	–.021
No. 5 Business	.459	.514	–.055
No. 5 Lang. Arts	.323	.325	–.002
H-Index (Prediction of College Grades Using 4 High School Grades)			
No. 1 Men	.389	.290	.099
No. 1 Women	.402	.386	.016
No. 2	.493	.310	.183
No. 3	.537	.473	.064
No. 4 Men	.301	.309	–.008
No. 4 Women	.447	.440	.007
No. 5 Business	.393	.462	–.069
No. 5 Lang. Arts	.496	.346	.050
TH-Index (Prediction of College Grades Using Tests and Grades)			
No. 1 Men	.413	.476	–.063
No. 1 Women	.459	.545	–.086
No. 2	.540	.354	.186
No. 3	.645	.534	.111
No. 4 Men	.374	.412	–.038
No. 4 Women	.537	.573	–.036
No. 5 Business	.524	.611	–.087
No. 5 Lang. Arts	.491	.420	.071

For six of the eight junior college groups, high school grades (the H-Index) were more predictive of college grades for transfer students than for terminal students. Again the absolute difference of .057 was not large.

The combination of tests and high school grades (the TH-Index) was about equally predictive of college grades for transfer and terminal students. The median absolute difference was .079. For five of the eight groups junior college grades for the terminal students were more predictable; for the other three groups, the transfer students were more predictable.

The theoretical expectation that junior college grades for transfer students would be more predictable than college grades for terminal students was borne out only when high school grades were used as predictors. The opposite was true for test scores. And combining scores and high school grades resulted in predictions of about the same magnitude for transfer and terminal students.

Some educators have suggested that measures on additional dimensions may be necessary for junior college terminal students, in order to obtain predictive correlations with college grades of the same magnitude as are currently found with college students following more academic curricula. These findings do not support this contention, but show that currently used tests are as valid predictors of college grades for terminal students as for transfer students. Variation among institutions in mean test scores, high school grades, and college grades as well as differences in prediction from campus to campus suggest the need for these matters to be investigated locally as a part of a junior college's institutional research program.

DISCUSSION

These results on prediction are confirmed by other research studies. Grades in specific courses and overall grades for junior college students were previously found by Hoyt and Munday (1966) to be predictable with satisfactory accuracy using ACT scores and high school grades. Several studies, however, have focused directly on the vocational-technical student and the prediction of academic success. There is considerable evidence that standard aptitude measures predict academic success for technical students reasonably well in a variety of courses in different settings (Anderson, R. C., 1966, Baird, L. L., 1969; Brodsky, S. M., 1964; Carlin, F. X., 1962; Gwydir, R. R., 1957; Halsey, H., 1966; Hoyt, D. P., 1966; Libby, D. F., 1963; Linn, R. L. and Davis, J. A., 1966; and Miller, J. G., 1966). When standard aptitude measures (test scores and high school grades) are compared with alternative predictors for these students the aptitude measures are for the most part the best predictors.

[1] *A minor adaptation of an article that appeared in* The Journal of College Student Personnel, *September, 1968, pages 325-329. Grateful acknowledgement is extended to the American Personnel and Guidance Association for permission to reprint it here.*

[2] *The TH-Index resembles an eight-variable multiple correlation using the four ACT test scores and four high school grades. Two college grade predictions for each student are obtained, one using tests, the other, high school grades. These grade predictions for each student are averaged, and this average prediction is correlated with actual college grades. The resulting correlation is the TH-Index.*

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APPENDIXES

INSTITUTIONAL FACTOR SCORES

These estimated factor scores for junior colleges were computed as a part of the analysis for ACT Research Report No. 9. They are included here to facilitate the use of this research in other studies involving differential comparisons of two-year colleges. Note scores are reported as stanines. Additional technical information about these factors are reported on pages 00–00 of this appendix.

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INSTITUTIONAL FACTORS SCORES–PART I

ESTIMATED FACTOR SCORES FOR JUNIOR COLLEGES[1]

College	*Cultural Affluence*	*Technological Specialization*	*Size*	*Age*	*Transfer Emphasis*	*Business Orientation*
Alabama						
Daniel Payne College	6	3	3	7	4*	6*
The Marion Institute	6	8	4	7	5	4
Sacred Heart College	9	4	6	4	8	6
Snead Junior College	6	4	5	8	6	5
Walker College	6	5	5	5	8	5
Alaska						
Anchorage Community College	5	5	6	1	5*	5*
Juneau-Douglas Comm. College	3	4*	3	1	5*	6*
Ketchikan Community College	5	3*	1	2	4*	5*
Palmer Community College	5*	5*	6*	3*	3*	5*
Sitka Community College	5	3	1	1	2*	5*
Arizona						
Eastern Arizona Junior College	4	5	6	8	5*	6
Phoenix College	3	5	9	4	8	6
Arkansas						
Fort Smith Junior College	5	7	6	6	7	5
Southern Baptist College	7	3	3	6	3	4
California						
Allan Hancock College	4	5*	7	5	5*	4*
American River Junior College	1	6	8	3	4*	5
Antelope Valley College	5	6	7	4	4*	1
Bakersfield College	2	5	8	6	6	6
Barstow College	5	6	5	1	3	1
Cabrillo College	5	4	5	3	3	3
Cerritos College	3	6	8	2	9	4
Chabot College	5	5	6	3	5	3
Chaffey College	4	5*	8	3	4*	3
Citrus College	5	6	8	4	5	2
City College of San Francisco	7	5	9	5	5	5
Coalinga Junior College	5	5	6	4	5	4
Cogswell Polytechnical College	8	9	1	7	1	2
College of the Desert	4	5	7	3	5*	8
College of Marin	3	5*	8	7	9	5*
College of San Mateo	7	5	9	6	5	5
College of the Sequoias	5	5	7	6	3	3
College of the Siskiyous	4	5	7	3	5	3
Compton College	3	6	8	4	5	3
Contra Costa College	5	6	8	3	4	3
Deep Springs College	9*	5*	1	9	4*	9*
Diablo Valley College	5	5*	8	3	5	3*
East Los Angeles College	4	5	9	2	9	4
El Camino College	5	6	9	4	8	6

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
California (continued)						
Foothill College	3	5	8	2	7	6
Fresno City College	5	6	8	4	5	3
Fullerton Junior College	3	6	9	6	5	5
Glendale College	2	5	9	7	7	3
Grossmont College	3	5	8	2	7	6
Hartnell College	6	6	7	6	7	5
Imperial Valley College	5*	5	7*	6	5*	6
Lassen College	5	8	5	5	4	5
Long Beach City College	2	7	9	3	4*	1
Los Angeles City College	7	5*	9	5	7	5*
Los Angeles Harbor College	5	6	8	3	5	3
Los Angeles Metropolitan Coll.	5	3	7	2	2	3
Los Angeles Pierce College	3	5	9	2	5	4
Los Angeles Trade-Tech College	3	9	9	4	1	1
Los Angeles Valley Junior College	4	5	8	3	4	5
Menlo College	9	7	5	7	5	7*
Modesto Junior College	4	6	9	6	3	4
Monterey Peninsula College	6	5	7	3*	8	5
Mt. San Antonio College	4	7	9	3	5	5*
Napa Junior College	5	5	7	2	4	3
Oakland City College[2]	7	8	9	3	5	3
Oceanside-Carlsbad College	2	6	6	3	5	5
Orange Coast College	2	5	9	3	5	4
Pacific College	9	4	4	5	9	7
Palo Verde College	7	3	5	2	5*	5
Palomar College	4	5	8	3	6	5
Pasadena City College	6	5	9	5	6	6
Porterville College	5	6	6	5	5	3
Reedley College	3	6	6	6	5	2
Riverside City College	3*	5*	7	7*	4*	4*
Sacramento City College	5	5	9	6	4	5
San Benito College[3]	6	5	5	6	2	3
San Bernadino Valley College	3	6	9	3	4	3
San Diego Junior College	1	7	9	4	5*	5
San Joaquin Delta Junior College	4	5	8	5	6	4
San Jose City College	5	6	9	4	5	5
Santa Ana College	4	6	8	5	5	4
Santa Barbara City College	4	5	6	5	5*	2
Santa Monica City College	2	6	9	4	4	3
Santa Rose Junior College	4	5	8	8	5	4
Shasta Junior College	5	5*	7	5	4*	5*
Sierra College	3	6	6	6	4	3
Southwestern College	5	7	6	2	5*	3
Taft College	4	5	6	5	8	3
Vallejo Junior College	5	5	6	5	5	3
Ventura College	4	7	8	8	3	4
Victor Valley College	5	6	5	2	2	4
Yuba College	5	6	8	5	6	3

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Colorado						
Mesa College	4	5	7	8	7	5
Northeastern Junior College	4	7	5	7	7	2
Otero Junior College	7	5	4	7	7	5
Rangely College	5	5	1	4	5*	6
Trinidad State Junior College	5	7	6	8	5	2
Connecticut						
Hartford College for Women	7	1	3	4	2	9
Hartford State Tech Institute	3	9	2	6	2	5
Junior College of Connecticut	6	4	9	4	8	8
Manchester Community College	5*	5*	5*	3*	5*	6*
Mitchell College	6	6	5	4	4	9
New Haven College	6	8	6	3	2	8
Norwalk Community College	3	4	3	1	4*	9
Norwalk State Tech Institute	2	9	4	2	2*	5
Quinnipiac College	6	3	6	5	4	9
Silvermine College of Art	7	2	1	5	2*	4
Delaware						
Wesley College	6	4	4	6	4	8
District of Columbia						
Immaculata College of Washington	8	3	4	6	3	7
Mount Vernon Junior College	8	1	3	7	5	7
Florida						
Brevard Junior College	4	5*	7	2	5	6*
Carver Junior College[4]	4*	3*	3*	3	3	2
Central Florida Junior College	5	5	6	4	5	6
Chipola Junior College	4	5	6	5	8	3
Daytona Beach Junior College	3	7	6	3	8	5
Edison Junior College	3	3	4	3	5*	6
Florida College	7	4	5	5	5*	7
Gibbs Junior College	5	2	6	5	5	4
Gulf Coast Junior College	4	6	6	4	7	6
Hampton Junior College	4	2	3	4	4	2
Indian River Junior College	5	6	5	4	7	6
Jackson Junior College	5	3*	1	5	4*	4*
Johnson Junior College	2	2	2	2	4*	3
Junior College of Broward County	4	3	5	3	4	6
Lake City Junior College and Forest Ranger School	4	6	3	4	3	5
Lake Sumter Junior College	5	5	4	3	5*	8
Lincoln Junior College	4	3*	1	3	5*	4*
Manatee Junior College	3	5	7	3	5	6*
Miami-Dade Junior College	4	5	8	4	5*	7
North Florida Junior College	5*	3	4	2	4	4
Orlando Junior College	5	6	6	4	8	6
Palm Beach Junior College	3	5*	7	5*	6	5*

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Florida (continued)						
Pensacola Junior College	3	6	8	4	9	8
Roosevelt Junior College	4	2	3	4	5	3
Rosenwald Comm. Junior College	5	2	1	3	3	2
St. Johns River Junior College	3	3	4	4	3	3*
St. Petersburg Junior College	2	5	8	6	5	5
Suwannee River Junior College	4	4	3	4	4	2
Volusia County Comm. Jr. Coll.	5	3	6	1	2	1
Washington Junior College	4	2	1	4	3	3
Georgia						
Abraham Baldwin Agr. College	3	8	5	9	3	6
Andrew College	8	4	4	7	5	6
Augusta College	2	4	6	5	5*	6
Birdwood Junior College	7	3	2	3	7	3
Brewton Parker College	6	3	3	7	5	3
Columbus College	4	5	5	4	4	6
Emmanuel College	8*	3	4	6*	4	2
Emory at Oxford	6	4*	3	8	5	7*
Georgia Military College	6	7	3	4	5	3
Gordon Military College	6	3	3	5	5	3
Middle Georgia College	4	7	6	7	4	4
Norman College	7	4	5	6	7	5
Reinhardt College	6	4	5	6	8	4
South Georgia College	5	4	5	8	7	7
Southern Technical Institute	5	9	5	5	1	4
Young Harris College	6	3	6	8	7	6
Idaho						
Boise Junior College	5	6	8	6	5*	6
North Idaho Junior College	6	7	5	6	5	6
Ricks College	8	3	7	8	5	5
Illinois						
Belleville Township Jr. College	3	5*	7	2	7	5
Black Hawk College	3	5	6	3	8	5
Bloom Township Comm. College	3	7	5	2	5	7
Canton Community College	3	5	4	2	4	2
Central YMCA Community College	8	3	6	1	4*	9*
Centralia Junior College	6	5	5	5	5	5
Chicago City Junior College						
Amundsen Branch	4	4	6	1	8	6*
Bogan Branch	3	5	7	1	8	6*
Crane Branch	5	4	8	4	5*	6*
Fenger Branch	6	4	6	1	7	4
Loop Branch	5*	4	7	1	5	7*
Southeast Branch	2	5	7	2	5	6*
Wilson Branch	5*	4	8*	4	5	6*
Wright Branch	4	5	9	5	5*	6*
Danville Junior College	2	4	5	2	5	4

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Illinois (continued)						
Elgin Community College	2	5	5	2	6	5
Freeport Community College	6	5	4	2	5*	4
Joliet Junior College	1	6*	7	5	5	5*
Kendall College	9	4	3	6	5	7*
La Salle-Peru-Oglesby Jr. Coll.	4	5	6	4	6	3
Lincoln College	7	4*	5	7	6	7*
Lyons Township Junior College	2	6	6	4	5	5*
Monticello College	9	1	6	8	7	8
Morton Junior College	3	6	7	4	6	6
Mt. Vernon Community College	2	5	3	3	5	3*
St. Bede Junior College	9	7	5	8	7	6
Southeastern Illinois College	4	2	2	3	4*	3
Springfield Junior College	6	5	6	5	9	5
Thornton Junior College	3	6*	6	6	4	6*
Trinity Christian College	8	3	1	4	4	8
Wabash Valley College	2	5	3	1	5	6
Indiana						
Vincennes University	5	5	6	7	5	6
Iowa						
Boone Junior College	5	9	1	6	2	1
Burlington Community College	2	8	5	5	5	2
Centerville Community College	3	9	1	5	4	3*
Clarinda Community College	3	7	1	6	4	2
Clinton Junior College	4	5*	6	3	5	4*
Creston Community College	6	5	4	5	5	5
Eagle Grove Junior College	4	6*	4	3	5	3*
Ellsworth College	2	5	5	6	6	6
Emmetsburg Comm. College	5	5	2	4	8	3
Estherville Junior College	5	4*	2	5	5	5
Fort Dodge Community College	4	6*	7	7	8	4
Grand View College	6	3	5	5	4	4
Keokuk Community College	3	6	5	4	8	4
Marshalltown Comm. College	4	4*	3	6	5	4*
Mason City Junior College	4	6	6	6	5	2*
Mt. St. Clare College	7	2*	5	9	3	7*
Muscatine Community College	4	5*	5	5	6	3*
Ottumwa Heights College	9	1	4	7	5	2
Waldorf College	7	4	5	9	5	5
Webster City Junior College	3	5	4	5	4	5
Kansas						
Arkansas City Junior College	6	7	6	6	5	3
Butler County Junior College	5	6	5	6	8	3
Central College	7	3*	2	6	5	5*
Chanute Junior College	5	5	5	4	5	3*
Coffeyville College	6	6	6	6	6	4
Dodge City College	5	5	5	5	6	1

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Kansas (continued)						
Donnelly College	5	4	5	4	8	7
Fort Scott Junior College	5	5	5	5	7	3
Garden City Junior College	5	6	6	6	6	6
Hesston College	8	3	5	6	5	7
Highland Junior College	4	5	5	4	5	3
Hutchinson Junior College	3	6	7	7	6	1
Independence Community College	3	6	6	5	8	1
Iola Junior College	5	5*	5	5	4	5*
Kansas City Kansas Junior Coll.	3	5*	5	7*	7	5*
Miltonvale Wesleyan College	8	3	2	6	4	3
Parsons Junior College	6	5	7	6	5	3
Pratt County College	5	6*	4	5	8	3*
St. John's College	8	2	5	6	6	5
Kentucky						
Alice Lloyd Junior College	8	3*	4	7	6	6*
Lees Junior College	6	4*	2	9	5	4*
Lindsey Wilson College	6	5	5	8	6	5
Midway Junior College	9	1	3	6	5	5
Paducah Junior College	2	5	5	4	5	6*
Southeastern Christian College	8	3	2	5	8	3
St. Catherine Junior College	7	3*	3	5	4	4*
Sue Bennett College	7	4	4	8	6	3
Maine						
Westbrook Junior College	6	1	4	7	4	8
Maryland						
Allegheny Community College	5	7	2	3	4*	7
Anne Arundel Community Coll.	1	6	3	1	7*	8
Baltimore Junior College	3	5	6	3	5	8
Catonsville Community College	3	7	3	3	9	8
Charles County Comm. College	4	6*	4*	1	5*	6*
Essex Community College	4	6	3	2	7	9
Frederick Community College	6	3	4	1	5	7
Hagerstown Junior College	5	5	5	4	7	6
Harford Junior College	3	6	3	1	7	9
Montgomery Junior College	3	6	7	4	7	7
Prince George's Comm. College	2	6	4	2	5	9
St. Mary's College of Maryland	5	2	4	7	3	5
Villa Julie College	7	1	2	4	1	6
Massachusetts						
Bay Path Junior College	7	1	4	5	2	6
Becker Junior College	6	2	4	8	1	7
Berkshire Community College	4	5	3	4	4	6
Bradford Junior College	9	2*	5	6	5	7*
Cambridge Junior College	9	4*	1	5	5	9*
Cape Cod Community College	2	3	3	4	4*	9

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Massachusetts (continued)						
Chamberlayne Junior College	6*	4	6*	6	4*	8
Dean Junior College	6	5	5	7	5	7
Endicott Junior College	7	3	6	7	5	9
Fisher Junior College	7	1	3	5	2	5
Franklin Inst. of Boston	7	9	3	6	1	5
Garland Junior College	8	1	3	7	3	6
Greenfield Community College	2	3	3	1	4*	7
Holyoke Community College	1	5	5	2	5	9
Lasell Junior College	6	1	5	6	3	7
Leicester Junior College	7	4	2	6	4	9
Mass. Bay Community College	3	4	4	5*	4*	6
Mount Ida Junior College	6	3	4	8	5	9
Newton Junior College	5	5*	4	4	4	9
Northern Essex Comm. College	3	4	3	4	4*	8
Pine Manor Junior College	8	2*	3	7	4	8*
Quincy Junior College	2	2	3	2	4	9
Wentworth Institute	6	9	6	6	3	5
Worcester Junior College	6	8	6	4	4	4
Michigan						
Alpena Community College	5	6	6	4	7	5
Delta College	4	5	8	3	5	8
Flint Community Junior College	5	6	9	6	7	7
Gogebic Community College	5	7	5	5	7	4
Grand Rapids Junior College	2	5	8	6	8	5*
Henry Ford Community College	3	7	8	3	5	6
Highland Park College	3	5*	7	7	8	5*
Jackson Junior College	6	7	6	6	3	5*
Kellogg Community College	3	5	6	3	5*	5
Lake Michigan College	3	5	6	4	5	4
Muskegon County Comm. College	2	7	6	6	5*	5
Northwestern Michigan College	4	4	6	4	7	5
Port Huron Junior College	8	5	7	6	9	4
Suomi College	7	3	3	6	5	6
Minnesota						
Austin Junior College	5	5	5	5	5	6
Bethany Lutheran College	9	4	5	6	7	5
Brainerd Junior College	3	4	4	6	7	4
Ely Junior College	4	4	5	6	8	3
Eveleth Junior College	6	5	5	5	9	2
Fergus Falls State Junior Coll.	4	3	3	3	7	4
Hibbing Junior College	4	5	6	6	4*	5
Itasca Junior College	5	5	5	5	5	5
Rochester Junior College	5	6	6	7	5	3
Virginia Junior College	5	5	6	7	9	2
Worthington Junior College	3	7	5	5	5	1

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Mississippi						
Clarke Memorial Junior Coll.	6	4*	3	7	6	6
Coahoma Junior College	3	3	3	4	4*	1
Copiah-Lincoln Junior College	5	6	6	7	5*	3
East Central Junior College	4	5	5	8	4	5
Gulf Park College	9	2*	3	8	5	5*
Hinds Junior College	4	4*	7	8	6	5
Holmes Junior College	5	6	5	9	7	5
Itawamba Junior College	3	6	6	5	6	2
J. P. Campbell College	8	3	3	6	4	5
Jones County Junior College	3	5	6	8	7	2
Mary Holmes Junior College	6	3	3	5	6	1
Meridian Junior College	4	5	7	3	6	4*
Mississippi Delta Junior College	4	5	5	9	6	2
Natchez Junior College	5	3*	1	7	5	6*
Northeast Mississippi Jr. Coll.	5	5	5	6	5	3
Northwest Mississippi Jr. Coll.	3	6	6	9	5	3
Pearl River Junior College	4	6	6	8	5	6
Perkinston College	4	5	6	7	9	4
Prentiss Normal & Ind. Inst.	6	8	2	4	3	1
Saints Junior College	9	3	3	9	3	1
Southeastern Baptist College	7	5*	3	4	2*	3*
Southwest Mississippi Jr. Coll.	5	3	3	9	2	3
T. J. Harris Junior College	5	5	4	3	4	1
Utica Junior College	3	4	3	7	4*	1
Wood Junior College	8	5*	4	6	6	4*
Missouri						
Christian College	7	1	6	8	5*	6*
College of the School of the Ozarks	6	5	6	4	4*	7
Cottey College	8	2*	4	8	5	7*
Hannibal-LaGrange College	7	5	6	7	6	6
Joplin Junior College[5]	3	5	6	5	8	3
Junior Coll. of Flat River	4	5	6	5	5	5*
Kemper Military School & Coll.	7	5*	2	6	7	5*
Metropolitan Jr. College of Kansas City	3	6	8	5	8	5*
Moberly Junior College	5	5*	4*	5	5*	5*
Southwest Baptist College	7	4	6	8	9	4
St. Joseph Junior College	3	5	6	7	8	3
Stephens College	7	2*	8	8	5	7*
Trenton Junior College	5	7	3	5	5	1
Wentworth Military Academy	9	7	4	8	4	8
Montana						
Custer County Junior College	7	4*	6	3	5	1
Dawson County Junior College	5	4	4	3	7	5

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Nebraska						
Fairbury Junior College	4	6*	5	5	7	4*
McCook College	5	5	4	7	5	5
Norfolk Junior College	3	5	4	6	5	2
Scottsbluff College	4	5	5	6	5	4
New Hampshire						
Colby Junior College	7	1	6	8	3	6
New Jersey						
Centenary College for Women	7	3	6	8	5	8
Trenton Junior College	3	8	5	4	4	5
Union Junior College	5	7	6	4	4	7
New Mexico						
New Mexico Military Institute	9	7*	6	9	5*	5*
New York						
Adirondack Community College	4	5	4	3	5*	7
Auburn Community College	3	5	6	3	4	8
Bennett College	8	1	4	6	3	9
Briarcliff College	8	2	5	6	3	7
Bronx Community College	7	6	7	2	4	7
Broome Tech Comm. College	4	7	6	4	2	6
Cazenovia College	7	1	4	6	3	9
Concordia Junior College	7	2	5	8	8	5
Corning Community College	5	6*	5	5	4	7*
Dutchess Community College	4	6	5	4	5	7
Elizabeth Seton College	9	1	3	3	4*	8
Erie County Technical Inst.	2	8	8	2	2*	6
Fashion Inst. of Tech.	5	4*	7	3	1	6*
Hudson Valley Comm. College	2	8	6	5	2	5
Jamestown Comm. College	5	6*	6	4	2*	6*
Jr. Coll. of Packer Collegiate Institute	9	1	3	5	4	7
Maria Regina College	8	2*	3	2	5*	8*
Mohawk Valley Comm. College	3	8	6	3	2	7
Monroe Community College	3	4	4	5	4*	6
Nassau Community College	4	5	6	1	8	7
New York City Community College of Applied Art & Sci.	4	6	8	3	2	7
Orange County Comm. College	5	5	6	4	5	5
Paul Smith's College	6	4	4	5*	3	8
Queensborough Comm. College	3	7	4	5	5	9
Rockland Comm. College	5	8	4	4	4	8
Staten Island Comm. College	4	8	7	3	4	8
State Univ. NY Agr. & Tech. Insts.						
Alfred	6	6	6	8	1	7
Canton	5	7	5	7	1	7
Cobleskill	5	4	4	8	1	5
Delhi	5	7	5	6	1	7
Farmingdale	4	8	8	5	2	6
Morrisville	5	6*	5	8	1	6*

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
New York (continued)						
Suffolk County Comm. College	2	5	6	2	7	7
Voorhees Technical Institute	8	9	2	4	2*	5
Westchester Comm. College	3	7	7	3	3	5
North Carolina						
Brevard College	7	4	6	6	7	6
Chowan College	6	6	5	7	3	6
College of the Albemarle	4	3	3	4	5*	8
Gardner-Webb College	6	5	5	8	8	5
Gaston Technical Institute	5	9	2	6	2*	3
Lees-McRae Junior College	6	5	5	8	4	5
Louisburg College	6	6	5	4	4	5
Mecklenburg College[6]	4	2	3	5	3	5
Mitchell College	6	2	4	6	2	4
Montreat-Anderson College	8	2	5	7	8	7
Mount Olive Junior College	6	2	3	5	4	5
Oak Ridge Military Institute	7	4	1	7	2	3*
Peace College	6	1	4	6	3	6
Sacred Heart Junior College	9	1	4	5	3	5
St. Mary's Junior College	7	1	4	8	5	5
Warren Wilson College	9	5	5	7	6	7*
Wingate College	6*	6*	7	7*	8	5*
North Dakota						
Bismarck Junior College	3	5	4	5	6	5
Lake Region Junior College	5*	3	3*	6	4	2
North Dakota School of Forestry	6	4	4	7	4*	3
N. Dak. State School of Science	4	8	6	9	3	3
Ohio						
Ohio College of Applied Science	5	9	5	7	1	4*
Sinclair College	6	7	5	3	2	7
Urbana College	8	5	4	5	9*	7
Oklahoma						
Altus Junior College	3*	5	5*	4	9	2
Bacone College	6	3	5	6	5	2
Cameron State Agric. College	6	7	6	6	8	5
Connors State Agric. College	5	8	6	7	3	4
Eastern Okla. A & M College	5	8	5	8	5	4
El Reno Junior College	3	4	3	2	7	1
Murray State Agric. College	5	7	5	8	5	7*
Northeastern Okla. A & M College	8	7	6	6	5*	4
Northern Okla. Junior College	5	5	5	7	5	4
Oklahoma Military Academy	7	7	6	7	3	5
Poteau Community College	5	5	4	3	4	3
Sayre Junior College	2	3	1	4	4	1
Seminole Junior College	9	4	3	3	4*	1
St. Gregory College	9	4	4	5	5	7

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Oregon						
Blue Mountain Comm. College	5*	5	4*	2	2*	4
Central Oregon College	5	6	6	2	5	3
Clatsop College	5	8	2	3	4*	5
Multnomah College	6	7	6	4	8	4
Oregon Tech Institute	5	8	6	6	1	5
Portland Community College	2	7	7	1	2*	2
Southwestern Oregon College	4	7	5	2	4*	5
Treasure Valley Comm. College	5	3	4	2	4*	4
Pennsylvania						
Eastern Pilgrim College	9	2	3	5	3	3*
Harcum Junior College	7	3	4	9	4	8
Hershey Junior College	6	5	6	6	8	6*
Keystone Junior College	6	5	5	6	6	8
Lackawanna Junior College	6	3	5	4	1	6
Manor Junior College	9	2*	4	4	4	7*
Mt. Aloysius Junior College	8	1	5	6	5	6
Penn Hall Junior College	8	1	4	6	3	7
Pa. State Univ. Cwth. Campuses						
Allentown Center	4	8	1	4	2*	5
Altoona Campus	3	8	5	3	4	6
Behrend Campus	4	8	4	6	5*	5
Berks Center	4	9	2	3	1	4
DuBois Campus	5	8	3	6	4	4
Hazelton Campus	5	8	4	6	4	3
McKeesport Campus	3	9	5	3	5	5*
New Kensington Center	3	8	3	1	1	5
Ogontz Campus	3	7	6	6	5	7
Schuykill Campus	5	8	3	6	9	4
Scranton Center	3	9	1	3	2	3
Wilkes-Barre Center	3	9	3	2	1	4
York Campus	3	9	1	4	1	4
Point Park Junior College	6	4	5	3	4*	8
Robert Morris Junior College	6	3	5	4	4*	7
Spring Garden Institute	6	9	4	1	1	6
Valley Forge Military Jr. Coll.	7	4	4	5	4	5*
York Junior College	6	5	6	4	5	7
Rhode Island						
Roger Williams Junior College	6	8	3	4	3	8
South Carolina						
Anderson Junior College	4	2	5	5	4	5
North Greenville Junior College	6	5	5	7	7	7
Spartanburg Junior College	6	3	4	7	3	3
Voorhees College	7	4	3	8	4	5
South Dakota						
Freeman Junior College	9	4	2	7	4	5*
Presentation Junior College	6	1	3	5	5	2

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Tennessee						
Cumberland College of Tenn.	6	3	4	5	9	8
Freed-Hardeman College	7	4	6	7	4	4
Hiwassee College	6	6	6	7	5	3
Lee College	7	2	4	6	6	3
Martin College	6	5	5	8	4	4*
Morristown College	6	2	3	6	3	4
Owen College	6	3*	3	3	4	4*
Texas						
Allen Academy	7	7	3	4	9	4*
Alvin Junior College	3	6	6	3	4	5
Amarillo College	4	5	7	5	8	5
Blinn College	3	6*	6	8	7	5*
Cisco Junior College	5	5	4	7	8	5*
Clarendon Junior College	5	3	4	6	5	3
Cooke County Junior College	4	5	4	6	9	3
Decatur Baptist College	6	3	4	7	4	6
Del Mar College	4	6	7	4	7	6
Frank Phillips College	4	5	6	5	5	4
Henderson County Junior College	3	5	7	5	5	4
Howard County Junior College	4	7	8	4	5	5
Jacksonville College	8	2	3	6	4	3*
Kilgore College	4	7	6	6	4	4
Laredo Junior College	7	3	5	5	3	4
Lee College	5	6	7	5	3	5
Lon Morris College	6	4	5	7	7	4
Lubbock Christian College	7	4	4	4	4	6
Lutheran Concordia College	8	3	3	6	5	5
Navarro Junior College	6	5	6	5	5	5
Odessa College	4	5	7	3	5	5
Panola College	4	5	5	4	5	5
Paris Junior College	5	8	4	7	4	5*
Ranger Junior College	5	3	3	6	7	5
San Angelo College	4	5	7	6	8	7
San Antonio College	3	5	8	4	4	5
San Jacinto College	3	5	7	3	9	6
Schreiner Institute	8	7*	4	6	5	5*
South Plains College	5	5	6	3	5	4
South Texas Junior College	7	5	7	3	9	9
Southwest Texas Junior College	5	5	7	2	8	5
Southwestern Assemblies of God College	8	2	6	6	5	4
Southwestern Christian College	9	2	3	4	5	3
Southwestern Union College	9	4	6	7	6	5
St. Philip's College	5	6	6	5	5	6
Temple Junior College	3	6	6	7	5	4
Texarkana College	3	5	6	6	4*	5*
Texas Southwest College	3	7	8	6	5*	7
Tyler Junior College	3	5	7	6	8	4

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
Texas (continued)						
The Victoria College	3	5	6	7	5*	5
Weatherford College	5	5	6	7	5	4
Wharton County Junior College	3	5	7	5	7	4
Utah						
Carbon College	6	6	6	6	8	5
Dixie College	6	5*	6	5	9	5*
Snow College	4	5*	5*	4	4	4*
Vermont						
Champlain College	7	5*	4	4	1	7*
Green Mountain College	7	1	5	6	5	8
Vermont College	6	1	5	7	4	7
Vermont Tech College	5	9	2	8	1	4
Virginia						
Averett College	6	3	5	7	5	6
Bluefield College	6	6	5	8	9	4
Christopher Newport College of William and Mary	3	3	3	3	5*	5
Clinch Valley College of University of Virginia	5	5	4	5	7	6
Danville Branch of VPI	2	7	3	5	3	8
Ferrum Junior College	6	5	5	9	5*	7
George Mason Col. of U. of Va.	5	9	2	3	4	7*
Marion College	7	3	4	8	5	4
Marymount College of Virginia	6	1	4	5	5	8
Richard Bland College of William and Mary	5	5	4	3	4*	6
Roanoke Tech Inst., Div. of VPI	4	9	1	3	2*	5
Shenandoah College	7	4*	3	7	5	5*
Southern Seminary Jr. College	6	2	4	7	5	6
Stratford College	7	1	4	6	3	5
Sullins College	8	1	5	9	4	6
Tech. Inst., Old Dominion	5*	9	3*	5	1	3
Virginia Intermont College	7	4	6	8	5	6
Washington						
Big Bend Community College	4	7	5	2	5*	5
Centralia College	4	6	6	7	8	3
Clark College	3	5	7	4	5*	5
Columbia Basin College	3	7	7	3	5	6
Everett Junior College	5	5	8	5	5*	6
Grays Harbor College	4	4	6	4	4	4
Highline College	3	6	5	2	5	5
Lower Columbia College	4	6	7	4	5	6
Olympic College	2	6	7	3	5*	4
Peninsula College	4	5	5	3	4*	3
Skagit Valley College	6	7	6	6	4	4
Wenatchee Valley College	3	6	7	4	4	6
Yakima Valley	6	6	7	6	7	4

Factor Scores For Junior Colleges (continued)

College	*Cult. Affl.*	*Tech. Spec.*	*Size*	*Age*	*Tfr. Emp.*	*Bus. Otn.*
West Virginia						
Beckley College	6	5*	5*	6	5*	5*
Greenbrier College	8	1	3	9	3	5
Potomac State Coll. of W. V. Univ.	5	4	6	8	8	6
Wisconsin						
Concordia College	6	5*	5	6	5	7
Milwaukee Inst. of Technology	4	8	8	4	2*	5
Milwaukee School of Engineering	7	9	6	6	2	6
Univ. of Wisc. Fresh & Soph Ctrs.						
Fox Valley Center	3	8	3	5	4*	7
Green Bay Center	2	8	4	5	4*	7
Kenosha Center	2	8	3	4	4*	7
Manitowoc County Center	1	9	1	4	4*	5
Marinette Center	2	9	1	4	4*	6
Marathon County Center	2	6	3	5	4*	7
Racine Center	3	7	3	6*	4*	7
Sheboygan County Center	3	9	1	5	4*	4
Wyoming						
Casper College	3	4	7	3	5	3
Goshen County Community Coll.	6	5*	2	5	3	4*
Northern Wyoming Comm. Coll.	6	7	6	5	4	6
Northwest Community College	6	5	4	5	6	4
Western Wyoming Junior Coll.	5	5	3	4	5*	1
Colleges which are now Four-Year Colleges						
Pueblo Jr. Coll. (Colorado)	3	6	8	5	6	4
Armstrong College of Savannah (Georgia)	2	6	6	5	5	6
Georgia Southwestern Coll. (Ga.)	6	4	6	8	5	8
Dordt College (Iowa)	6	3*	3	5	5	7*
Cumberland Coll. (Kentucky)	6	4*	5	7	5	7*
Baltimore Coll. of Commerce (Md.)	5	4*	4	4	4*	5
Eastern College (Maryland)	5	4*	5	2	3	5*
Spring Arbor College (Mich.)	7	3*	4	7	5*	7
Concordia College (Minnesota)	7	2	6	5	9	5
Asheville-Biltmore College (N. C.)	5	6	5	5	5	7
Charlotte College (N. C.)	4	7	6	3	7	7
Wilmington College (N. C.)	3	5	5	5	7	6
Gwynedd-Mercy Coll. (Pa.)	7	3	5	3	2	6
Central Wesleyan Coll. (S. C.)	7	2	3	8	5	6
Colleges which have Closed						
Collier-Blocker Jr. Coll. (Fla.)	4	2	1	4	3	1
Bethel College (Kentucky)	7	3	5	7	5	7
Wessington Springs Coll. (S. D.)	9	3	3	6	5	3

Note.–Scores in this table are stanine scores. For a description of stanine scores see J. P. Guilford's Fundamental statistics in psychology and education. *New York: McGraw-Hill, 1956, p. 503.*

[1] *An * indicates that the mean score was substituted for one or more missing variables in the computation of the factor score.*

[2] *Now separated into two colleges, Merritt College and Laney College.*

[3] *Now Gavilan College.*

[4] *Now merged with Brevard Junior College.*

[5] *Now Jasper County Junior College.*

[6] *Now included in Central Piedmont Community College.*

INSTITUTIONAL FACTOR SCORES, PART 2

DESCRIPTION OF VARIABLES USED IN COMPUTATION OF JUNIOR COLLEGE ESTIMATED FACTOR SCORES

Cultural Affluence

1. Relative Library Size–number of books divided by the total enrollment. Decimal is placed so a college with 500 books and a total enrollment of 100 will have a score of 5.00.

2. Percentage of Foreign Students in the Student Body–number of foreign students divided by *total* enrollment. Decimal is placed so that a college with 4 foreign students and total enrollment of 100 will have a score of 4.00.

3. Faculty Student Ratio–number of *full-time* faculty divided by number of *full-time* students. Decimal is placed so that a college with 9 full-time faculty members and 100 full-time students would have a score of .09.

4. Private vs. Public Control–public score 0; private score 1.00.

Technological Specialization

1. Realistic Orientation–this variable is taken from the Environmental Assessment Technique.[1] The score is the number of students studying fields classified as ***Realistic*** (agriculture, forestry, engineering, etc.) divided by the total number of students studying fields which can be classified in the EAT system. Only fields which clearly belong in one of the EAT types are considered and students in the undifferentiated "liberal arts" curriculum are not included. Decimal is placed so that a college with 15 students studying "Realistic" fields and 100 students studying in all classifiable fields would have a score of 15.00.

2. Technological Emphasis–no technical training 0, technical training plus other training 1.00, technical school only 2.00.

3. Percentage of Males in the Student Body–*total* number of males divided by *total* enrollment. Decimal is placed so that a college with 65 men and a total enrollment of 100 would have a score of 65.00.

Size

1. Total Enrollment–in order to obtain a more nearly normal distribution, the score is the square root of the *total* enrollment. Thus a college with a total enrollment of 400 would have a score of 20.00.

2. Variety of Curriculum–total number of different fields of study offered. A college offering 25 fields would have a score of 25.00.

3. Library Size–number of books in the library in units of 1000. A college with 12,500 books would have a score of 12.50.

Age

1. Percentage of Faculty which is Full-Time–number of *full-time* faculty members divided by *total* number on faculty. A college with 75 full-time faculty members and a total of 100 on the faculty would have a score of 75.00.

2. Age of College[2]–colleges founded since 1954 scored 3.00, colleges founded between 1945 and 1954 scored 2.00, colleges founded between 1930 and 1944 scored 1.00, and colleges founded before 1930 scored 0.

3. Percentage of Part-Time Students–number of *part-time* students divided by *total* enrollment. A school with 15 part-time students and a total enrollment of 100 would have a score of 15.00.

Transfer Emphasis

1. Teacher Training Emphasis–no teacher training 0, teacher training plus other training 1.00, teacher training only 2.00.

2. Percentage of Graduates Going on to Four-year Colleges–for a college that had 65% of its graduates going on to four-year colleges, the score would be 65.00.

3. Liberal Arts Emphasis–no liberal arts curriculum 0, liberal arts plus other curricula 1.00, liberal arts only 2.00.

Business Orientation

1. Enterprising Orientation–this variable is based on the Environmental Assessment Technique. The score is the number of students studying fields classified as "Enterprising" (pre-law, business administration,

marketing, etc.) divided by the total number of students studying fields which can be classified in the EAT typology. Only fields clearly belonging in one of the EAT types are considered. A college with 13 students studying "Enterprising" fields and 100 students studying in all possible fields would have a score of 13.00.

2. Percent of Faculty holding a Doctoral Degree–score is the *total* number of faculty members with a doctoral degree divided by the *total* number on the faculty. Both full-time and part-time faculty members are included. A school with 12 doctoral degree holders on the faculty and a total of 100 on the faculty would have a score of 12.00.

3. Tuition–total cost of tuition in dollars. For public institutions, non-resident fees are used. A college with a tuition of $575 per year would have a score of 575.00.

[1] *Astin, A. W., & Holland, J. L. The Environmental Assessment Technique: a way to measure college environments.* Journal of Educational Psychology, *1961, 52, 308-316.*

[2] *Note that* young *colleges have* high *scores. Such scores were used in actually computing correlations among variables, and are used in computing factor scores. In reporting the factor analysis, however, this variable was reflected so that positive correlations and factor loadings indicate* older *colleges.*

CONVERSION OF JUNIOR COLLEGE FACTOR SCORES TO STANINE SCORES

	Factor Scores						
Stanine Score	*Cultural Affluence*	*Techno. Special.*	*Size*	*Age*	*Transfer Emphasis*	*Business Orientat.*	*Stanine Score*
9	64–170	66–76	72–106	63–71	61–70	66–96	9
8	59–63	58–65	62–71	61–62	59–60	60–65	8
7	54–58	55–57	55–61	58–60	58	54–59	7
6	50–53	53–54	50–54	54–57	57	50–53	6
5	47–49	50–52	47–49	49–53	49–56	47–49	5
4	46	45–49	45–46	44–48	44–48	45–46	4
3	45	40–44	43–44	38–43	38–43	43–44	3
2	44	35–39	42	34–37	30–37	42	2
1	0–43	0–34	0–41	0–33	0–29	0–41	1

BETA WEIGHTS AND MEANS FOR VARIABLES USED IN COMPUTATION OF ESTIMATED FACTOR SCORES FOR JUNIOR COLLEGES

Factor	*Mean*	*Beta*
Cultural Affluence (multiple correlation with factor = .85)		
1. Relative Library Size	27.68	.3775
2. % of Foreign Students	.80	.4022
3. Faculty/Student Ratio	.07	.2241
4. Private vs. Public Control	.32	.1851
Technological Specialization (R = .83)		
1. Realistic Orientation	25.26	.4044
2. Technological Emphasis	.75	.3351
3. % of Males in the Student Body	58.48	.2741
Size (R = .89)		
1. Total Enrollment	30.10	.5149
2. Variety of Curriculum	17.68	.2931
3. Library Size	12.76	.2614
Age (R = .87)		
*1. Age	1.14	.4700
2. % of Faculty Which is Full-Time	65.06	.3715
3. % of Part-Time Students	29.17	−.3380
Transfer Emphasis (R = .89)		
1. Teacher Training Emphasis	.58	.5924
2. % of Graduates going to 4-Year Colleges	59.50	.4084
3. Liberal Arts Emphasis	.91	.2938
Business Orientation (R = .82)		
1. Enterprising Orientation	9.51	.4582
2. % of Faculty with Doctoral Degree	6.92	.4156
3. Tuition	394.57	.3806

Note.–In the computation of the factor scores, these means are substituted for missing data.

**This Beta weight is given as calculated from the correlations cited in the ACT Research Report of this study. Note, however, that these correlations were reflected because of the scoring system used. Therefore, as indicated in the formula for the factor scores, when using the actual scoring system this variable must have a negative weight.*

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